

EFFECTS OF ACACIA HONEY DRINK SUPPLEMENTATION DURING REHYDRATION AFTER EXERCISE ON PHYSIOLOGICAL PARAMETERS AND SUBSEQUENT RUNNING PERFORMANCE IN THE HEAT

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Introduction: Prolonged exercise in a hot and humid environment will result in glycogen depletion and associated with loss of body fluid. Carbohydrate contained in honey can served as a useful alternative form of carbohydrate for enhancing sports performance. This study was designed to investigate the effectiveness of honey drink compared to sports drink as post-exercise recovery aids for subsequent running time trial performance and physiological parameters in a hot and humid environment.

Methods: Ten male recreational athletes (age: 22.2 ± 2.0 years, VO_{2max} : 51.5 ± 3.7 ml.kg⁻¹.min⁻¹) participated in this randomized cross-over study. On each trial, subjects were required to run for one hour in the glycogen depletion phase (Run-1), followed by a rehydration phase for two hours and subsequently a 20 minutes time trial performance (Run-2). During Run-1, subjects were required to run on the treadmill in the heat (31 °C) with 70% relative humidity at 70% of their VO_{2max} . During rehydration phase subjects drank either honey drink or sports drink or plain water with amount equivalent to 150% of body weight loss in dispersed interval (60%, 50% and 40%) at 0 min, 30 min and 60 min respectively. Subsequently, time trial was performed by the subject in 20 minutes and the longest distance covered was recorded. Physiological parameters were analysed using two-way ANOVA with repeated measure and time trial performance was analysed using one-way ANOVA.

Result: The present study showed that Acacia honey elicited a better time trial performance with significantly longer distance compared to water trial ($P = 0.03$, $P < 0.05$). However, there was no significant difference between Acacia honey and sport drink trials ($P = 0.729$, $P > 0.05$). Acacia honey and sports drink trials elicited 249 m (8.24%) and 211 m (6.79%) longer in distance compared to the water trial respectively. For physiological parameters, plasma glucose, plasma insulin and plasma free fatty acids in Acacia honey and sports drink trials were significantly higher compared

to the water trial respectively during rehydration phase and time trial running performance phase. However, there were no significant differences in body weight changes, oxygen uptake, heart rate, rate of perceived exertion, tympanic temperature, room temperature, relative humidity, hematocrit, plasma volume changes, plasma cortisol and urine parameters in all the trials.

Conclusion: These results suggest that rehydration with Acacia honey and sports drink elicited greater beneficial effects on running performance and physiological parameters compared to water trial. However, statistical significance was only observed between Acacia honey and water in running time trial performance. Thus, Acacia honey drink has potential to be used as an ergogenic aid for rehydration purposes in athletes who train and compete in hot and humid environment.

Supervisor:

Dr Chen Chee Keong

Co-supervisors:

Associate Professor Dr Mohamed Saat Ismail

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AN OBSERVATIONAL STUDY OF FUNCTIONAL SIGNIFICANCE OF VISUAL PROMPT IN INITIATING AND MAINTAINING STRETCHING BEHAVIOUR PRIOR TO EXERCISE

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Introduction: Flexibility and pain-free joints are important for good health and well-being. In developing flexibility, stretching exercises provide the means of training stimulus. Static stretching is often used as a part of pre-activity preparation and is considered the gold standard for measuring flexibility. Exercise can be promoted until it becomes more motivating by providing cues and prompts are the cue that initiates behaviour. This study investigated the effects of visual prompt in promoting the behaviour of static stretching among the users of Universiti Sains Malaysia's jogging track.

Methods: This observational study was conducted over eight weeks. Data were collected in four phases, pre-banner phase, banner phase, and post-banner phase with duration of each phase of two weeks. Following post-banner phase, a follow-up was conducted for another two weeks by distributing survey questionnaires to users. Direct observation

was conducted with the aid of video recording to gather information about the number of users who did the static stretching and proper static stretching prior to exercise. Weather was also recorded as one of the variables.

Results: Static stretching and proper static stretching increased significantly upon introduction of the banner during the banner phase ($P < 0.01$). Percentage increase from 40.9% to 59.1%, $\chi^2 = 20.02$ on the static stretching and from 34.9% to 65.1%, $\chi^2 = 9.95$ on the proper static stretching. However, after the removal of the banner during the post-banner phase the behaviour of static stretching and proper static stretching decreased, although not significantly. From 59.1% to 48.8%, $\chi^2 = 0.001$, on static stretching behaviour and from 65.1% to 51.2%, $\chi^2 = 4.17$ on proper static stretching behaviour. On the other hand, during the post-banner phase, static stretching behaviour was found to be significantly more than the pre-banner phase (40.9% to 48.8%, $\chi^2 = 15.86$) and proper static stretching was also found to have increased (34.9% to 51.2%, $\chi^2 = 0.98$), but not significantly.

Conclusion: Thus, from these findings it can be concluded that the visual prompt can be effectively used to encourage users of the jogging track in Universiti Sains Malaysia to do static stretching prior to exercise. Moreover, visual prompt could potentially be an effective as well as inexpensive tool to promote physical activity.

Supervisor:

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Co-supervisor:

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EFFECTS OF HEAT ON OXIDATIVE STRESS, PHYSIOLOGICAL RESPONSES, AND TIME TRIAL PERFORMANCE IN RECREATIONAL ATHLETES

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Introduction: Previous studies have shown that increased production of free radicals during exercise may lead to oxidative stress and affect exercise performance.

Objectives: The purpose of this study was to investigate the effects of heat on oxidative stress, physiological response, and time trial performance in recreational athletes.

Methods: Twelve male recreational athletes (Age: 23.1 ± 2.1 years old; body weight: 64.0 ± 8.7 kg; VO_{2max} : 54.3 ± 4.6 mL.kg⁻¹.min⁻¹) performed running exercise at 70% of their respective VO_{2max} for 60 minutes and immediately followed by a 20 minutes time trial performance on a motorised treadmill in randomised controlled cross-over trial which are either in the heat (32°C room temperature, 70% relative humidity) or thermoneutral (25°C room temperature, 70% relative humidity) environments. Blood samples were drawn before

warm-up, at the beginning of exercise, every 20 minutes of exercise and 24 h post-exercise. The samples were analysed for haematocrit level, haemoglobin concentration, plasma volume changes, plasma glucose, plasma free fatty acid, plasma lactate, plasma creatine kinase, reduced glutathione, and oxidised glutathione (GSH:GSSG) ratio. ANOVA with repeated measures was used to test for interaction between treatment and time of all blood and physiological parameters. Differences in endurance running performance were analysed with student's t test.

Results: The results did not show any significant difference in the oxidative stress marker (GSH and GSSG ratio) measured between trials ($P = 0.963$), where the mean GSH and GSSG ratio at the end of exercise in the N and H trials was 25.4 (SD 6.9) and 27.7 (SD 13.6) respectively. Besides, there were also no differences between trials in the following physiological and blood parameters—heart rate, core temperature, RPE, RER, haematocrit level, haemoglobin concentration, plasma glucose, plasma free fatty acid, plasma lactate and creatine kinase. However, oxygen uptake and plasma volume changes were significantly ($P < 0.05$) higher in the H trial compared to the N trial. The running distance in the H trial was 0.31 km shorter ($P < 0.001$) compared to the N trial.

Conclusion: In conclusion, these data demonstrated that prolonged running in the heat did not seem to induce oxidative stress nor have any effect on the heart rate, core temperature, RPE, RER, haematocrit level, haemoglobin, plasma glucose, plasma free fatty acid, plasma lactate, and plasma creatine kinase among the recreational athletes. However, the hot and humid environment impaired the endurance running performance of these athletes.

Supervisor:

Dr Chen Chee Keong

Co-supervisor:

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DETERMINATION OF rs9939609 POLYMORPHISM OF FAT-MASS AND OBESITY ASSOCIATED (FTO) GENE IN OVERWEIGHT MALAY CHILDREN IN RELATION TO PHYSICAL ACTIVITY AND CARDIORESPIRATORY FITNESS LEVEL

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Introduction: Overweight and obesity has now become a global issue affecting various countries including Malaysia. However, the association between the *FTO* gene and the problem of overweight and obesity has not been consistent in non-European populations.

Objectives: This study aims to investigate the

association between the rs9939609 polymorphism of the *FTO* gene and overweight in Malay children.

Methods: A total of 107 healthy Malay subjects aged 9 to 12 years old were recruited in this study. All subjects were assessed for height, weight, body mass index (BMI), waist circumference (WC), percentage of body fat, level of physical activity, one mile run/walk performance and presence of the *FTO* rs9939609 polymorphism.

Results: Based on the sequencing results, the polymorphism of the rs9939609 variant of the *FTO* gene was present in the Malay children population with the minor A allele frequency at 0.25. The subjects' BMI ranged from 11.7 to 32, WC ranged between 45.5 and 106 cm while body fat percentage ranged between 5.1 and 39.6%. However, there was no association between *FTO* rs9939609 polymorphism and BMI ($P = 0.9014$), WC ($P = 0.6828$) and percentage of body fat ($P = 0.9011$). There were also no significant associations between rs9939609 polymorphism and gender ($P = 0.3345$), level of physical activity ($P = 0.2458$) and predicted maximal oxygen consumption ($P = 0.2514$).

Conclusion: This study found that there was no significant association between the rs9939609 polymorphism of the *FTO* gene and overweight measures, gender, level of physical activity and cardiorespiratory fitness.

Supervisor:

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THE PATTERNS AND VARIATIONS OF THE CIRCLE OF WILLIS AND THEIR RELATIONSHIP WITH CEREBRAL ANEURYSM USING CT ANGIOGRAPHY IN HOSPITAL UNIVERSITI SAINS MALAYSIA: A RADIOANATOMICAL STUDY

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Introduction: The complete arterial circle of Willis provides collateral circulation by its communicating arteries. However, many studies showed that the complete circle of Willis is atypical in about 40–70% of population due to the relatively common occurrence of vascular anomalies. The atypical circles showed higher incidence of cerebral vascular diseases like aneurysm and cerebral infarction. Nowadays, advancements in imaging studies, like computed tomography (CT) angiography, made it easier & more accurate to study the cerebral vessels. This imaging modality is used in the Hospital Universiti Sains Malaysia (HUSM) and the database can be considered as a rich source for anatomical studies.

Objectives: The main objective of this study was to identify the different patterns of circle of Willis in the patients who underwent CT angiography in HUSM and the relationship between these patterns and the development of aneurysms.

Methods: A retrospective study on CT angiographies in HUSM by recording the diameters of the vascular segments, anomalies and aneurysm. Upon that the sample was divided into two groups; group with aneurysm and group without aneurysm. Then the different patterns were identified and tested statistically to compare our findings with other populations and to relate these anomalies with aneurysms development.

Results: The study showed that aneurysms were found in 55% of the (123) patients with significant higher incidence in females and in older age ($P < 0.05$). Gender and side differences in vessels diameters were not proven and the anomalies were detected significantly more in the posterior communicating artery. The aneurysm group showed higher incidence of anomalies as well ($P < 0.001$). Overall, the complete pattern was represented in 17% only but significant difference in the occurrence of incomplete circles in aneurysm group was not detected.

Conclusions: The vessels diameters, anomalies prevalence and aneurysm sites in this population were comparable to others. The higher prevalence of vascular anomalies in the posterior vessels could be related to the higher development of aneurysms in the anterior vessels, reflecting the haemodynamic redistribution of blood. Finally, the incomplete pattern in this population was higher than other populations.

Supervisor:

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THE EFFECTS OF CARBOFURAN ON THYROID GLAND OF FEMALE RATS

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Introduction: Carbofuran (2,3-dihydro-2,2-dimethyl-7-benzofuranyl-N-methylcarbamate) is a carbamate pesticide that is commonly used in paddy fields for rodent control in Malaysia. Carbofuran exerts various adverse effects to the non-target organisms. Although the toxicity effect of carbofuran has been widely explored, its effect on the thyroid gland in many species including human is still questionable.

Objectives: The aim of this study is to investigate the histopathological changes, histomorphometric alteration of the thyroid gland, thyroid activation index, and thyroid

stimulating hormone level of the female rats after exposure to carbofuran.

Methods: This experiment was a randomised control trial study. Twenty female Sprague Dawleys rats were randomly allocated into control, low dose, medium dose and high dose groups that were exposed to normal saline, 0.6 mg/kg carbofuran, 1.2 mg/kg carbofuran and 2.4 mg/kg carbofuran respectively. The exposure was done via oral gavage once daily for 28 days. Body weight and toxicity were monitored daily. Sections of thyroid gland were sampled by adopting the systematic uniform random sampling method and stained with hematoxylin & eosin dyes. Besides qualitative analysis, semi-quantitative analysis was also done to assess the severity of histopathological changes. The serum thyroid stimulating hormone was measured by ELISA method.

Results: Histopathological assessments showed abnormal features of thyroid in all the groups such as the presence of desquamated follicular cells into follicular lumen, damaged follicles, increased interstitial space, abortive follicles, hyperplastic follicles, and hydropic degeneration in all groups. However, only the severity score of abortive follicles was significantly higher in carbofuran treated groups compared to control ($P < 0.05$). Whereas for the histomorphometric features, the follicles circumference was found to be significant ($P < 0.05$) compared to follicle area, colloid area, and circumference, follicular cell height and follicular cell area. The thyroid activation index and thyroid stimulating hormone were found not to be significant.

Conclusion: This study shows that carbofuran could induce the histopathological changes and histomorphometric alteration of thyroid gland in female rats thus, the toxicity effect of carbofuran should be explored further.

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THE EFFECTS OF TOCOTRIENOL RICH FRACTION ON CHRONIC RESTRAINT STRESS-INDUCED CHANGES IN THE HIPPOCAMPUS OF MALE RATS

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Introduction: Tocotrienol is a member of natural vitamin E that consists of four chemically distinct forms: α -, β -, γ - and δ -tocotrienol. Tocotrienol has antioxidant capacity. Several studies showed the potential protective effect of tocotrienol on stress related organ injury. However, the role of tocotrienol on hippocampus after exposure to stress is still

largely unknown. Stress is one of the psychological problems which affects most of the individuals in their daily life. Stress may damage the brain especially the hippocampus if it occurs for a long period of time. It is a well known fact that the oxygen radical generated by stress and excess of corticosterone secreted during prolong stress are hazardous on human wellbeing.

Objectives: The purpose of this study was to examine the neuroprotective effect of tocotrienol on hippocampus under restraint stress by observing the histopathological and histomorphometric changes and quantifying the serum corticosterone level in rats after exposure to stress for 21 days.

Methods: Thirty six male Sprague Dawley rats aged five weeks old were divided into four groups: control, restraint stress, tocotrienol, and restraint stress treated with tocotrienol. Restraint stress and restraint stress treated with tocotrienol groups were exposed to 5 hours of restraint stress daily for 21 days. Tocotrienol group and restraint stress treated with tocotrienol group received 200 mg/kg body weight of tocotrienol rich fraction (TRF) by oral gavage daily. Control group and restraint stress group received normal saline by oral gavage. Body weight was monitored daily. At the end of experimental period, the rats were sacrificed and the sections of hippocampus were sampled by adopting the systemic random sampling method and were stained with hematoxylin and eosin, cresyl fast violet, and immunohistochemistry using anti Ki-67 antibody and anti GAP-43 antibody. The serum collected was assessed for corticosterone level by ELISA. Data was analysed by using, PASW statistical software (version 18).

Results: The study had found that the level of corticosterone was significantly higher in the restraint stress group as compared to control group and tocotrienol group and this was reflected in the weight of the adrenal gland mass. However, TRF supplementation failed to alter the corticosterone level and the adrenal gland mass. The study also showed the number of proliferative cells in the subgranular zone of the dentate gyrus in the restraint stress group as labelled by Ki-67 antibody was significantly lower as compared to control group. However, TRF supplementation failed to provide protection against the effect of stress on cell proliferation in the dentate gyrus. The histopathological assessment showed no significant difference in granular cell and pyramidal cell counts between all group comparisons. The histomorphometric assessment also showed no significant difference of hippocampal thickness and optical density of GAP-43 in all groups.

Conclusion: The present study shows that TRF supplementation is not effective to prevent the changes in the hippocampus after exposure to chronic restraint stress.

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RISK PERCEPTION ON SAFE DRINKING WATER AND FACTORS ASSOCIATED WITH SAFE DRINKING WATER PREFERENCES AMONG HUSM OUTPATIENT CLINIC ATTENDEES IN KOTA BHARU KELANTAN

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Introduction: Safe drinking water source is the main topic discussed nowadays. Worldwide, food and water borne diseases resulted from consuming unsafe drinking water source. The aim of this study is to assess preference for safe drinking water, risk perception on safe drinking water and factors associated with preference for safe drinking water among Hospital Universiti Sains Malaysia (HUSM) outpatient clinic attendees in Kota Bharu, Kelantan.

Methods: A cross-sectional study was conducted on 115 outpatient clinic attendees at HUSM from 1st February to 30th April 2011. Convenient sampling was applied and face to face interview was conducted among consented respondents. The questionnaire used consisted of socio-demographic data, preference for drinking water, perception on drinking water quality and safe drinking water, preventive measures taken, and general knowledge on water and health.

Results: The proportion of preference for safe drinking water among HUSM outpatient clinic attendees is low at 30.4% (95% CI: 0.22, 0.39) compared to preference of unsafe drinking water source which is 69.6% (95% CI: 0.61, 0.78). The health risk perception toward safe drinking water is almost equal between those who have high perceived health risks and those with low perceived health which are 46.1% (95% CI: 0.37, 0.55) and 53.9% (95% CI: 0.45, 0.63) consecutively. The significant associated factors for preference of safe drinking water are current used of drinking water source and monthly household income status. Person who currently uses municipal water supply as their drinking water source has 14.32 times odds to prefer safe drinking water than person who uses other sources of drinking water (95% CI: 4.08, 50.30, $P < 0.001$). Person with low monthly household income status has 4.38 times odds to prefer unsafe drinking water than person who is below poverty line (95% CI: 1.18, 16.19, $P = 0.027$). Furthermore, person with middle household income status has 9.28 times odds for preference of unsafe drinking water source than person who is below poverty line (95% CI: 2.12, 40.59, $P = 0.003$).

Conclusion: The proportion of preference of safe drinking water among HUSM outpatient clinic attendees is low. Health risk perceptions toward safe drinking water are worrisome. Effective public awareness campaigns and interventions to improve health risk perception, to build stronger confidence toward municipal water sources will enable public to make good decision on safe drinking water. Therefore, these will help to reduce incidence of health risk

related to water borne diseases.

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Co-supervisor:
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TREATMENT OUTCOME OF TUBERCULOSIS IN CHILDREN AND ITS ASSOCIATED FACTORS IN EAST COAST OF MALAYSIA

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Introduction: In 2010, there were 19 337 cases of tuberculosis notified with incidence rate of 66.9 per 100 000 population of which 443 (2.3%) were children. Among factors identified that contributed toward treatment outcome of tuberculosis in children were difficulty in diagnosis and ensuring compliance. This study was conducted to determine the treatment outcome of tuberculosis in children for East Coast of Malaysia and identify factors associated with the treatment outcome.

Methods: A cross-sectional study was conducted through review of medical reports from 2009 through 2011 of children less than 15 years old at eight selected hospitals situated in the states of Kelantan, Terengganu, and Pahang. Children who did not complete the treatment by the end of the study period were excluded. Successful treatment outcome was defined as cured and completed treatment. Unsuccessful treatment outcome was defined as cases that defaulted, failed treatment or died.

Results: There were 93 children diagnosed and treated as tuberculosis of which 53 (57.0%) were from 5 to 14 years of age, 51 (54.8%) were female, 74 (79.6%) were Malay and 30 (32.3%) came from families with monthly household income of less than RM 800. There were 64 (68.8%) with pulmonary tuberculosis, 23 (24.7%) with weight for age less than the third centile, 25 (26.9%) with comorbidities, 49 (52.7%) with contact to tuberculous patient. There were 67 (72.0%) children which completed treatment, 9 (9.7%) cured, 11 (11.8%) defaulted, 1 (1.1%) failed treatment and 5 (5.4%) died. These led to 76 (81.7%) with successful treatment outcome and 17 (18.3%) with unsuccessful treatment outcome. Through multiple logistic regression analysis, non-Malay race (odds ratio: 5.84; 95% confidence interval: 1.59, 21.49; $P = 0.008$) and monthly household income of less than RM800 (odds ratio: 6.98; 95% confidence interval: 1.85, 26.28; $P = 0.004$) were factors found to have significant association with unsuccessful treatment outcome.

Conclusion: The main factors associated with unsuccessful treatment outcome identified were low household income and Orang Asli as they comprised of 14 (73.7%) of the

non-Malay race.

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Co-supervisor:

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THE PREVALENCE OF MACROSOMIC BABIES IN GESTATIONAL DIABETES MELLITUS AND ITS ASSOCIATED FACTORS AT BESUT DISTRICT

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Introduction: There is a worldwide consensus that delivery of a macrosomic or large-for-gestational-age (LGA) infant is associated with morbidity and mortality of fetal and maternal due to gestational diabetes mellitus. The objective of this study was to determine the prevalence of macrosomic babies in Gestational Diabetes Mellitus (GDM) mothers and its associated factors in Besut district, Terengganu from 2009 until 2011.

Methods: A retrospective cross-sectional study was conducted in February 2012 using secondary data obtained from Antenatal card, KIK/1(b)/96 and birth registry who registered at all health clinic in Besut District. Data were entered and analyzed using SPSS version 18.0. There were 796 GDM mothers registered in Health Clinics Besut District from 2009 to 2011. Three hundred and ninety-eight were eligible for this study.

Result: Majority of the mothers with GDM who delivered macrosomic babies were of total household income more than RM 701, with the mean age 33.6 where minimum age was 18 years old and maximum 46. The GDM mothers who delivered macrosomic babies was also with mean parity of 4.4 and majority 52 (62.7%) in secondary school qualification. The prevalence of macrosomia in GDM was 20.9%, CI: 0.17, 0.25. Diet counselling, uncontrolled blood sugar level and pre-pregnancy BMI were significantly associated with macrosomia (ORadj: 2.64; 95% CI: 1.23, 5.68; $P < 0.013$, ORadj: 0.11; 95% CI: 0.06, 0.19; $P < 0.001$, ORadj: 1.85; 95% CI: 1.07, 3.21; $P < 0.029$) respectively.

Conclusion: In the conclusion, by knowing the possible risk factors for macrosomia which are preventable and modifiable, early comprehensive management and intervention should take place.

Supervisor:

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Co-supervisor:

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DIABETIC FOOT ULCER AND ASSOCIATED FACTORS IN HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN

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Introduction: Diabetes is a major health problem worldwide. One of the complications of diabetes mellitus is diabetic foot ulcer. Furthermore, it can cause disability, morbidity and even mortality to those who live with it. Besides that, it can cause burden to the health care services. The objective of this study is to describe the characteristics of diabetic foot ulcer patients and factors associated with it in HUSM, Kelantan from 2009 to 2011.

Methods: A case control study was conducted in January 2011 using secondary data obtained from diabetic patients' folder with and without foot ulcer. Data were entered and analyzed using Predictive Analytics Software Statistics (PASW) version 18.0. There were 288 patients eligible for this study.

Result: The mean age of diabetic foot ulcer patients was 56.2 (SD 8.7) with higher proportion among Malay (95.8%) and non-smoker patients (77.8%). The significant associated factors for diabetic foot ulcer were longer duration of diabetes, presence of coronary heart disease, increase level of HbA1c and presence of diabetic neuropathy with OR : 1.002 (95% CI: 1.000, 1.003), OR: 0.37 (95% CI: 0.17, 0.78), OR : 1.26 (95% CI: 1.22, 1.41, OR: 3.96 (95% CI: 2.19, 7.19) respectively.

Conclusion: In conclusion, compliance to diabetic treatment and good glycaemic control should be emphasized to prevent the development of foot ulcer among diabetic patients.

Supervisor:

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Co-supervisor:

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CARDIOVASCULAR DISEASE RISK FACTORS AND PHYSICAL FITNESS AMONG OBESE AND NON-OBESE GOVERNMENT SERVANTS IN BESUT DISTRICT

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Introduction: Cardiovascular diseases are major causes of death globally. Prevalence of risk factors for cardiovascular disease along with obesity is increasing. Increase

of obesity prevalence triggered number of cardiovascular diseases and other non-communicable diseases. The burden on cardiovascular disease in Malaysia is increasing and is associated with multiple risk factors.

Objectives: This study aimed to determine the cardiovascular risk factors and its association with obesity status among obese and non-obese governmental servants in Besut district.

Methods and Materials: A cross-sectional study design was carried out from 2nd December 2012 to 24th March 2011. A 118 consented respondents were interviewed using translated Malay version of WHO STEPwise approach to chronic disease risk factor surveillance questionnaire. Physical fitness were assessed by flexibility, handgrip strength, back and leg strength, push-ups, sit ups test ,and 20 meter shuttle run to calculate VO₂ max oxygen consumption.

Results: A total of 118 people participated in the study shows that 76.3% of the respondents were male and 99.2% were Malay. There are significant difference in age and marital status in obese group compared to non-obese. The mean (SD) age of non-obese respondents were younger, 34.0 years old (SD 11.12), whilst obese respondents mean age were 41.3 years old (SD 10.13). Majority of obese are married, 76 (90.5%) compared to non-obese, 22 (64.7%). Anthropometric measurements shows that the obese group had significantly higher mean (SD) of hip circumference, waist circumference and waist hip ratio compared to non-obese group. Prevalence of abdominal obesity was 65.5% in obese respondents compared to non-obese, 0%. For central obesity, obese respondents also shows higher prevalence, 51.2% compared to non-obese, 0%. Majority of obese respondents had hypertension, 57.1% compared to non-obese, 23.5%. 79.8% of obese respondents had hypercholesterolemia compared to 55.9% in non-obese respondents. Fitness test shows that 100% of obese respondents were not fit on cardio-respiratory test. Analysis shows there is significant difference between cardio-respiratory fitness test and obesity status ($P = 0.022$). There are an association of physical activity, hypertension and hypercholesterolemia with obesity status.

Conclusion: In conclusion, this study found significantly high prevalence of abdominal obesity, hypertension, hypercholesterolemia, and cardio-respiratory unfit in obese compared than non-obese. There are significant association of physical activity, hypertension, and hypercholesterolemia with obesity status.

Supervisor:

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Co-supervisors:

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Associate Professor Dr Mohamed Saat b Ismail

PERCEPTION ON GRAPHIC WARNING SIGN ON CIGARETTE PACK AMONG SMOKERS ATTENDING OUTPATIENT CLINIC HOSPITAL UNIVERSITI SAINS MALAYSIA KUBANG KERIAN KELANTAN

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Introduction: Malaysia has amended graphic warning on cigarette pack since January 2009. This was amended following the Framework Convention on Tobacco Control (FCTC) provision. Since two years post-introduction of graphic warning sign on cigarette pack in Malaysia, there was no evaluation done to look for the effectiveness of the health promotion. This study will examine the perception of smokers regarding graphic warning sign on cigarette pack.

Methods: This was a three months cross-sectional study that had been done in outpatient clinic in Hospital Universiti Sains Malaysia using systematic random sampling method. These surveys used validated self administered questionnaire.

Results: All 194 respondents were Malay male smokers. The overall mean percentage of perception was 60.6 percent. The smokers perceive poor perception (79.95%) on graphic warning sign on cigarette pack. The factor associated with good perception on graphic warning sign on cigarette pack was low educational level with adjusted Odds Ratio 2.39 and 95% CI (1.11–5.16) and P value 0.026 compared with high educational level.

Conclusion: The perception on graphic warning sign on cigarette pack among smokers was poor. The associated factor for good perception was low level of educational compared with high level of education. So, we would like to recommend to change the graphic warning sign more frequent and more scary graphic warning sign.

Supervisor:

Dr Mohd Ismail Ibrahim

Co-supervisor:

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EFFECT OF THE INTERVENTION MODULE ON THE JOB DISSATISFACTION AMONG TEACHERS OF THE DISABLED WORKING IN COMMUNITY-BASED REHABILITATION CENTRES KELANTAN

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Introduction: Job satisfaction among school teachers is very essential to the continuing growth of educational systems around the world. Improving knowledge and skill of teachers may help to improve their job satisfaction. The objective of this study were to determine the effect of intervention on the job dissatisfaction of teachers handling the disabled in Community Based Rehabilitation Centres, Kelantan as well as to identify the factors influencing the change in job dissatisfaction.

Methods: An intervention study was conducted from December 2011 and January 2012. Ten modules were carried out along intervention periods (over one and a half year) via few methods such as interactive workshops, hands on and visit for skill monitoring to improve the knowledge, and skill of the teachers thus improving their job satisfaction. A JCQ questionnaire was distributed to evaluate the effect of intervention on the job dissatisfaction among 30 CBRs teachers in Kelantan, who attended the intervention. Repeated Measure ANOVA was used to analyse the change in job dissatisfaction during pre-, mid-term, and post-intervention. Simple and Multiple Linear Regression was used to analyse the factors associated with the change in job dissatisfaction between pre and post intervention.

Result: There was a statistically significant reduction in the mean of job dissatisfaction across the three positive of measurement ($F(1, 41) = 3.68, P = 0.048$). Paired t test revealed the significant difference was between pre-intervention assessment and post-intervention assessment. Co-worker support ($\beta = 0.034$ (95% CI = 0.009, 0.059), $P = 0.009$), decision authority ($\beta : -0.023$; 95% CI: -0.036, -0.01; $P : 0.002$) and marital status ($\beta : -0.107$; 95% CI: -0.176, -0.038; $P : 0.004$) were significant predictors for the change in job dissatisfaction.

Conclusion: In conclusion, the intervention program elicits a statistically significant improve in job dissatisfaction score among CBRs teachers. Marital status, co-workers support and decision authority influenced the change in job satisfaction. Regular intervention program should be carried out to sustain the positive impact.

Supervisor:
Dr Azriani bt Abdul Rahman
Co-supervisor:
Dr Aziah Daud

GEOGRAPHICAL DISTRIBUTION AND RELATED ENVIRONMENTAL FACTORS OF LEPTOSPIROSIS IN KELANTAN USING A GEOGRAPHICAL INFORMATION SYSTEM (GIS)

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Introduction: Leptospirosis is a worldwide zoonotic disease caused by pathogenic spirochete, *Leptospira interrogans*. It has been reported in Malaysia since 1920. Most of human leptospirosis cases worldwide have been acquired as a result from occupational or environmental exposure.

Objectives: The aim of this study was to evaluate the spatial distribution and environmental risk factors of human leptospirosis in Kelantan.

Methods: A cross-sectional study was conducted among all MAT positive patients (titre $\geq 1/400$) admitted to hospitals in Kelantan from August 2010 to February 2011. A field survey was conducted from 1st to 15th February 2012 to record the geographical coordinate of these cases. The data were analyzed using ArcGIS 9, ArcMap 9.3 GIS software.

Results: There were 83 confirmed leptospirosis cases in Kelantan from August 2010 to February 2011. Male outnumbered female cases with Malay as the predominant race. More than half of the patients were in high risk occupational group. The point pattern analysis showed that the distribution of leptospirosis in Kelantan was clustered with the NNI value was less than 1 (NNI = 0.67; Z score = -5.65; 99% CI). Twenty nine of the cases (35.4%) lived within 500 meters, 48 (59.8%) within 1000 meters, 59 (71.9%) within 1500 meters, and 74 (90.2%) within 3000 meters from the river. Majority of the cases (67.1%) resided in agriculture land use which included horticulture, rubber, paddy, orchards, and other crops. Another 24.4% resided in urban, settlements, and associated non-agricultural area.

Conclusion: Leptospirosis in Kelantan was distributed in cluster form and occurred throughout the state with no districts spared. The clustered distribution of leptospirosis suggested that there were common risk factors involved in the spread of the disease. In our study, distance from the river and type of land use were the most likely factors that favour the spread of the leptospirosis.

Supervisor:
Dr Aziah Daud
Co-supervisor:
Dr Ahmad Filza Ismail

KNOWLEDGE ON OCCUPATIONAL SAFETY AND HEALTH AMONG HEALTHCARE WORKERS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Occupational injuries and diseases are major issues in health care sector. It is a great burden for both employee and employer. In order for employer to ensure the healthcare workers perform, daily jobs without getting sick,

assessment of general knowledge on occupational safety and health is essential. A safe working culture practice through preventive measures requires some knowledge, skills and competence among healthcare workers. This study aimed to assess knowledge on occupational safety and health (OSH) among healthcare workers working in Hospital Universiti Sains Malaysia (HUSM).

Methods: A cross-sectional study was conducted among 171 healthcare workers, including doctors and paramedics (nurses and medical assistants). A validated self-administered questionnaire was used to collect data. Numerical variables such as age, knowledge score, duration of working (year) were presented as mean (SD), while categorical variables were described as frequency and percentage. Multiple linear regression was applied to determine the associated factors for the knowledge score.

Results: We found that overall knowledge on Occupational Safety and Health among the healthcare workers at HUSM was relatively poor. The overall mean knowledge score on OSH was marginally moderate with overall mean knowledge score of 50.4% (SD 12.91). Doctors demonstrated better knowledge as compared to paramedics. The respondents had a good knowledge on Personal Protective Equipment with mean score of 93.9% (SD 16.46) compared to other OSH components such as occupational hazards with mean score of 66.7% (SD 22.24), general OSH with mean score of 52.0% (SD 24.90) and OSH legislation with mean score of 57.9% (SD 28.80). Job category was associated with OSH Knowledge (adjusted b 15.4; 95% CI 11.90- 18.87; $P < 0.001$).

Conclusion: OSH knowledge among healthcare workers in HUSM is relatively poor which is overall mean knowledge score of 50.4% (SD 12.91). Doctors have better OSH knowledge compared to paramedics. In this sample only job category was associated with OSH knowledge.

Supervisor:

Dr Mohd Nazri bin Shafei

Co-supervisor:

Dr Kamarul Imran bin Musa

QUESTIONS VETTING AND ITS EFFECTS ON EXAMINATION SCORES, PASS-FAIL OUTCOME, COGNITIVE LEVELS, ITEM DIFFICULTY AND DISCRIMINATION INDICES, AMONG 3RD YEAR MEDICAL STUDENTS, SCHOOL OF MEDICAL SCIENCES, UNIVERSITI SAINS MALAYSIA

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Introduction: Question vetting is considered an important process to ensure validity, reliability, and other quality indicators of assessment tools. Faculty members invest

substantial amount of time and effort into the question vetting process. However, there is lack of scientific evidence showing its effectiveness and to which level the vetting process must be undertaken.

Objectives: This study aimed to provide scientific evidence regarding the effects of question vetting process on student performance by looking at certain parameters which were examination scores, pass-fail outcomes, difficulty and discrimination indices, and cognitive levels between vetted and non-vetted questions. Eventually, to come up with practical recommendations on the question vetting process based on the results obtained.

Methods: A parallel randomized control trial was conducted on the third year medical students in School of Medical Sciences (SMS), Universiti Sains Malaysia (USM). They were divided into two equal groups (i.e. control and experimental). A mock examination was used twice (time I and time II). At time I, non-vetted questions were administered to both study groups (i.e. experimental and control) as a baseline measurement. At time II, vetted questions were administered to the experimental group, while the same non-vetted questions were administered to the control group.

Results: Out of 203 students, 160 students (78.8%) participated in the 1st mock examination (Time I). Out of 160 students, 129 (80.6%) participated in the 2nd mock examination (Time II). Data from the 129 students were selected for analysis in which 65 students (50.4%) were in the control group and 64 students (49.6%) were in the experimental group. Statistical analysis showed that there were no significant differences ($P > 0.05$) of mean examination scores, pass-fail outcomes, difficulty and discrimination indices between or within the control and experimental groups at both mock examinations. Similarly, perception of students in both study groups was not significantly different.

Conclusion: This study suggested that the questions vetting process was not associated with examination performance, psychometric properties of questions as well as students' perception regarding the questions regardless of the types of assessment tool. Despite of these discouraging findings, we believe that the question vetting process is still an important activity to ensure test items are developed to the highest quality and standard. Further studies need to be done to clarify the findings of our study.

Supervisor:

Dr Ahmad Fuad bin Abdul Rahim

Co-supervisor:

Dr Muhamad Saiful Bahri bin Yusoff

CONFIRMATORY FACTOR ANALYSIS (CFA) OF USM EMOTIONAL QUOTIENT INVENTORY (USMEQ-i) AMONG MEDICAL DEGREE PROGRAM APPLICANTS IN UNIVERSITI SAINS MALAYSIA (USM)

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Introduction: Emotional intelligence (EI) is thought to be an important aspect of being good medical doctors apart from outstanding academic performance. As such selecting the right applicants for places in medical school based on academic credentials alone is inadequate; assessment of EI of the applicants is also necessary. Universiti Sains Malaysia (USM) Emotional Quotient Inventory (USMEQ-i) is an emotional intelligence (EI) inventory developed to be used for medical student selection process in USM. Exploratory factor analysis (EFA) of the inventory to determine its validity and reliability was done. EFA is explorative in nature and insufficient for inventory validation. Therefore, confirmatory factor analysis (CFA) of the inventory is necessary given its status as a soon-to-be-implemented measurement tool in student selection process in USM.

Objectives: To determine measurement model validity and construct validity of USMEQ-i among medical degree program applicants in USM by CFA.

Methods: USMEQ-i data file for medical degree program applicants in USM for year 2010/2011 and 2011/2012 academic sessions were obtained from Medical Education Department in USM. A random sample of 512 cases were drawn from the data file. Of the sample, only 453 cases were valid study sample after preliminary data screening and assumption checking. CFA was conducted on the sample using maximum likelihood (ML) estimation with bootstrapping technique due to violation of multivariate normality assumption. USMEQ-i measurement model was proposed as a second-order EI factor with seven first-order factors of EI, and a Faking Index (FI) factor with correlation between the two factors.

Results: The proposed model could not fit into the study sample data. EI factors and FI factor had to be analyzed separately due to non-positive definite problem. After modifications to the models, CFA of EI factors were suggestive of two-factor model instead of the proposed seven-factor model. CFA of FI factor maintained one-factor model.

Conclusion: The modified USMEQ-i, which consisted of separate EI and FI models, was proven to have valid measurement models and reliable constructs. It is considered to be suitable for use among applicants to medical degree program in USM. Its' usage as medical student selection tool may require further research, especially how predictive USMEQ-i scores with real performance of medical students, generalizability of the inventory and its stability over time.

*Supervisor:
Professor Dr Syed Hatim Noor
Co-supervisor:
Dr Muhamad Saiful Bahri Yusoff*

SURVIVAL AND PROGNOSTIC FACTORS OF ACUTE MYELOID LEUKEMIA PATIENTS TREATED WITH ALLOGENEIC HAEMATOPOIETIC STEM CELL TRANSPLANTATION IN MALAYSIA

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Introduction: Allogeneic haematopoietic stem cell transplantation (HSCT) activities for acute myeloid leukemia (AML) patients in Malaysia have increased in recent years, yet limited studies have report their survival and prognostic factors. The research findings obtained are expected to help to identify patients that most benefit from the treatment.

Objectives: To determine the overall survival probabilities and identify prognostic factors of death among AML patients treated with HSCT in Malaysia.

Methods: A retrospective record review was conducted on 300 AML patients treated with allogeneic HSCT in Malaysia that registered at the Blood and Bone Marrow Transplant Registry, National Transplant Registry during the years from 1987 to 2010. Kaplan-Meier Product Limit Estimates, Simple, and Multiple Cox regression were performed to determine the statistically significant prognostic factors of mortality among the AML patients in Malaysia.

Results: The 10-year overall survival probability of AML patients treated with allogeneic HSCT in Malaysia was 63.1% (95% Confidence Interval: 56.8, 68.6). The 10-year overall survival probabilities were found to be significantly different in performance score, marrow status at transplant, source of stem cells, donor type, and graft-versus-host disease prophylaxis. The significant prognostic factors that were identified in this study were female donor (Adjusted Hazard Ratio = 1.71; 95% CI: 1.10, 2.66; P value = 0.016), marrow status second complete remission or beyond (Adjusted HR = 2.00; 95% CI: 1.16, 3.46; P value = 0.013), marrow status refractory (Adjusted HR = 4.66; 95% CI: 2.40, 9.06; P value < 0.001) and conditioning intensity non-myeloablative (Adjusted HR = 1.91; 95% CI: 1.21, 3.01; P value = 0.005).

Conclusion: AML patients who were treated with allogeneic HSCT in Malaysia were shown to have good overall survival rate. Thus, HSCT could be the standard option for suitable patients. Donor's sex, marrow status and conditioning intensity were the important prognostic factors of death among the AML patients treated with HSCT in Malaysia.

*Supervisor:
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Co-supervisors:
Associate Professor Dr Norsa'adah Bachok
Dr Azlan Husin*

CONFIRMATORY FACTOR ANALYSIS (CFA) OF MALAY VERSION PATIENT SATISFACTION (MISS-21) QUESTIONNAIRE ON PATIENT-SATISFACTION ON PATIENT-PHYSICIAN INTERACTIONS IN KLINIK RAWATAN KELUARGA (KRK), HUSM

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Introduction: A medical consultation forms part of a continuing process of coping with illness. Patient satisfaction influences the outcomes of the patient-physician encounter. Importantly, assessment of patient satisfaction can also be used as an outcome indicator of any primary care intervention program and factors influencing the health outcome. A Malay version MISS-21 questionnaire allows an assessment of patient satisfaction level for a better preventive approach in primary health care services.

Objectives: The objective of this study was to translate and validate Malay version (MISS-21) patient satisfaction questionnaire on patient-physician interaction in Klinik Rawatan Keluarga, HUSM using a confirmatory approach.

Methods: A cross-sectional study involving 252 patients attending Klinik Rawatan Keluarga (KRK), HUSM was done in October 2011 until January 2012. Construct validity (convergent and discriminant) using Confirmatory Factor Analysis (CFA) and internal consistency was performed after the translation, content validity and face validity process. The Construct Reliability of the final construct was calculated manually. Criterion validity was assessed using Pearson correlations with the total scale of Shared Decision Making-9 item questionnaire (SDMQ-9). The data was analyzed using Analysis of Moment Structure (AMOS) version 19.

Results: A total of 252 (100%) outpatients responded to this study. The confirmatory factor analysis suggested elimination of 10 items (from total 21 items) and combination of two factors (Compliance Intent and Communication Comfort) which renamed as Interaction Outcome. The reduced three factors model with 11 items had a good fit (Fit indices: χ^2 (df) = 65.805 (32), $P < 0.001$; Tucker-Lewis Indices (TLI) = 0.902; Comparative Fit Index (CFI) = 0.927; Root Mean Square Error of Approximation (RMSEA) = 0.061; Standardize Root Mean Square Residual (SRMR) = 0.058) valid and reliable construct (Distress Relief: Composite Reliability (CR) = 0.541, Average Variance Extracted (AVE) = 0.240; Rapport: Composite Reliability (CR) = 0.720, Average Variance Extracted (AVE) = 0.400; Interaction Outcome; Composite Reliability (CR) = 0.760, Average Variance Extracted (AVE) = 0.522. Shared Variance (SV) for Rapport and Distress Relief = 0.342; Interaction Outcome and Distress Relief = 0.019; Interaction Outcome and Rapport = 0.012). The SDMQ-9 had a moderate correlation with the total score of the final construct ($r =$

0.406, $P < 0.001$).

Conclusion: The study suggested that the three factor model with 11 items of the Malay Version MISS-21 was acceptable to be used to assess patient satisfaction on patient-physician interaction in primary health care setting because it is valid, reliable and simple.

Supervisor:

Dr Aniza Abd Aziz

Co-supervisors:

Dr Norhayati Mohd Noor

Associate Professor Dr Norsaadah Bachok

PROGNOSTIC FACTORS OF PATIENTS WITH *Acinetobacter Baumannii* BACTEREMIA NOSOCOMIAL INFECTION IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: *Acinetobacter baumannii* has emerged as an important and problematic human pathogen as it is the causative agent of several type of infection including bacteremia. The research finding on the prognostic factors obtained are expected to help in management the *Acinetobacter baumannii* nosocomial infection and improving the survival rate.

Objectives: The objectives of this study are to determine the median survival time of patient with *Acinetobacter baumannii* bacteremia nosocomial infection, and to identify the prognostic factors that influenced the mortality among patients with *Acinetobacter baumannii* bacteremia infection.

Methods: A retrospective record review was conducted involving 130 patients of bacteremia infected with *Acinetobacter baumannii* in HUSM, from 1st January 2010 to 31st December 2011. All patients who fulfilled the inclusion and exclusion criteria were included in the study. Additional follow up was done from 1st January 2012 until 31st January 2012 (1 month). All the important information on the variables interest and patients' survival status until 31st January 2012 were collected and recorded into data collection form. Kaplan Meier estimator, simple and multiple Cox Proportional Hazard regression were performed to determine the median survival and statistical significance of the prognostic factors.

Results: A total of 67 (51.5%) patients died in this study. The overall median survival time for patient with *Acinetobacter baumannii* bacteremia in this study was 40 days (95% CI: 31.33, 44.99). After adjusting for other variables, the significant prognostic factors that influenced the mortality of *Acinetobacter baumannii* nosocomial bacteremia in this study were mechanical ventilation (HR = 57.18; 95% CI:

37.79, 61.66; P value < 0.001) and antibiotic susceptibility (HR = 3.15, 95% CI: 1.69, 5.88; P value < 0.001).

Conclusion: The median survival time for patient with *Acinetobacter baumannii* bacteremia in the study was higher (40 days) compared to the previous study. Patients with *A. baumannii* bacteremia who needed mechanical ventilation and resistant to antibiotics were at higher risk of death compared with those who did not need mechanical ventilation and susceptible to antibiotics. However, other potential prognostic factor such as invasive procedure, presence of neutropenia, and renal failure were not identified as the significant prognostic factor in this study.

Supervisor:

Dr Sarimah Abdullah

Co-supervisors:

Dr Aniza Abdul Aziz

Dr Siti Suraiya Md Noor

THE IMPACT OF DISABLED CHILDREN ON PARENT HEALTH-RELATED QUALITY OF LIFE AND FAMILY FUNCTIONING IN KELANTAN AND ITS ASSOCIATED FACTORS

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Introduction: Disability places a set of extra demands or challenges on the family system. Disabilities affect significantly on the children's independence, and consequently on the lives of their family members, especially parents as their long-term caregivers. Thus, information related to the factors associated with the family impact is worth explored.

Objectives: The purposes of this study were to determine the impact of having disabled children on parents' health-related quality of life, family functioning and total family impact, and identify the associated factors.

Methods: This was a cross-sectional study involving 425 parents/caregivers of disabled children who were registered to Pusat Pemulihan Dalam Komuniti (PDK) in five districts in Kelantan. The PedsQL™ Family Impact Module was used to assess the family impact. Higher scores indicate better functioning. General Linear Regression was applied to analyze the association between family impact scores and study factors using Stata/SE 11 software.

Results: The mean (SD) Total Impact Score of these parents/caregivers was 75.1 (16.85). The mean (SD) of Parent HRQOL Summary Score was 75.0 (SD 18.74) and the median (IQR) of Family Functioning Summary Score was 84.4 (SD 28.13). Factors significantly associated with Total Impact Score were parents/caregivers' gender (adj. b -3.71; 95% CI -7.14, -0.28; P = 0.034), race (adj. b -11.99; 95% CI -21.18, -2.81; P = 0.011), marital status (adj. b -7.52; 95% CI -14.33,

-0.70; P = 0.031); and children's reported medical/health problems (adj. b -6.27; 95% CI -9.52, -3.01; P < 0.001), hearing impairments (adj. b -6.35; 95% CI -10.81, -1.89; P = 0.005), cerebral palsy (adj. b -9.20; 95% CI -13.20, -5.20; P < 0.001), ADHD (adj. b -6.78; 95% CI -11.87, -1.70; P = 0.009). Parent HRQOL Summary Score was significantly associated with parents/caregivers' gender (adj. b -5.52; 95% CI -9.32, -1.72; P = 0.005), race (adj. b -14.19; 95% CI -24.35, -4.03; P = 0.006), marital status (adj. b -7.67; 95% CI -15.32, -0.02; P = 0.049), educational level (adj. b 4.28; 95% CI 0.57, 7.99; P = 0.024); and children's reported medical/health problems (adj. b -7.13; 95% CI -10.72, -3.53; P < 0.001), hearing impairments (adj. b -7.77; 95% CI -12.68, -2.86; P = 0.002), cerebral palsy (adj. b -9.82; 95% CI -14.22, -5.43; P < 0.001). Factors significantly associated with Family Functioning Summary Score were parents/caregivers' race (adj. b -17.34; 95% CI -28.28, -6.39; P = 0.002), number of disabled children (adj. b -5.46; 95% CI -10.81, -0.11; P = 0.046); and children's gender (adj. b 3.75; 95% CI 0.14, 7.37; P = 0.042), hearing impairments (adj. b -5.67; 95% CI -10.99, -0.34; P = 0.037), cerebral palsy (adj. b -8.33; 95% CI -13.10, -3.55; P = 0.001), ADHD (adj. b -7.33; 95% CI -13.42, -1.24; P = 0.018).

Conclusion: Mothers, Non-Malays, widowed, and low educated parents/caregivers; having more number of disabled children, male disabled children, children with medical/health problems, hearing impairments, cerebral palsy and ADHD had lower parent and family functioning. Results of this study recognize that issue of children with disabilities necessarily involves the whole family as the focus of services and supports by health care providers.

Supervisor:

Dr Aniza Abd. Aziz

Co-supervisor:

Dr Azriani Abd. Rahman

VERBAL ABUSE AND ITS ASSOCIATED FACTORS AMONG NURSING STUDENTS DURING CLINICAL POSTING IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Healthcare systems are not free from the prevalence of verbal abuse. Hospital nursing is a stressful occupation not only because of the awesome responsibilities of everyday practice, but also because of well acknowledge of verbal abuse. Health staffs have high risk of being subjected to verbal abuse and similar risk had been faced by nursing students because they worked in the same kind of work environments.

Objective: The aims of this study to determine the

proportion of verbal abuse experiences and its associated factors among nursing students in clinical setting.

Methods: This was the cross – sectional study of 180 nursing students who were studying in year two until year four and had gone through clinical posting in HUSM for a minimum of five months. The students were asked to answer the questionnaire regarding verbal abuse that they had experienced six months prior to the study. Multiple Logistic Regression analysis was applied.

Results: Finding revealed approximately 37.2% (95% CI 30.1, 44.4) of nursing students had experienced verbal abuse while working in the hospital. Most of the perpetrators were nurses (22.5%) and doctors (21.5%). However, 81.3% of students accepted the incidents as a normal part of work. Being female (OR 2.7, 95% CI: 1.17, 5.99, P value = 0.020) and no social support from lecturers (OR 3.3, 95% CI: 1.66, 6.67, P value = 0.001) were significant factors that associated with verbal abuse among nursing students.

Conclusion: The result of this study showed that there was a significant number of verbal abuse event directed at nursing students in clinical setting. This revealed the need for immediate plan and action for dealing with verbal abuse in the hospital.

Supervisor:
Dr Sarimah Abdullah
Co-supervisor:
Dr Aziah Daud

INVESTIGATION OF *Strongyloides stercoralis* INFECTION AMONG CANCER PATIENTS AT HOSPITAL UNIVERSITI SAINS MALAYSIA USING MOLECULAR, SEROLOGICAL AND PARASITOLOGICAL TECHNIQUES

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Introduction: Strongyloidiasis is thought to be one of the most commonly neglected parasitic infections globally, especially in the tropics and sub-tropics. However, public health significance of the disease is far from being negligible since the infection can remain dormant for decades in the host and may be activated after immunity dysregulation caused by immunosuppressants administration, such those given in patients with cancer and autoimmune diseases. The laboratory diagnosis of *S. stercoralis* is known to be problematic; the sensitivity and specificity of immunodiagnostic assays can vary considerably and the number of larvae in stool sample can be very low.

Methods: A total of 192 patients were evaluated from December, 2010 to August, 2011. About 35% of patients were immunosuppressed at the time of sampling. Stool

samples were investigated for *S. stercoralis* larvae by direct microscopic examination. Real-time PCR using specific *S. stercoralis* primers and probes was performed on extracted DNA from stool samples. Serological diagnosis was performed using indirect enzyme-linked immunosorbent assay (ELISA) for specific detection of IgG, IgE, and IgG4 antibodies. ELISAs were also performed on control samples that comprised 25 serum samples from healthy individuals and 24 serum samples positive for other parasitic infections. In addition, real-time PCR was performed on 53 stool samples positive for infections other than strongyloidiasis.

Result: Of the 192 samples examined, 1 (0.5%) was positive for *S. stercoralis* by direct microscopy, 3 (1.6%) by real-time PCR, 8 (4.2%) by lab-based IgG ELISA, 3 (1.6%) by commercial IgG ELISA and 6 (3.1%) by lab-based IgG4 ELISA. Serum IgE was negative in all samples. Among the eleven positive cases, real-time PCR, microscopy, commercial IgG-ELISA, and lab-based ELISAs for IgG, IgG4, and IgE were positive for 3 (27.2%), 1 (9.0%), 3 (27.2%), 8 (72.7%), 6 (54.5%), and 0 (0%), respectively.

Conclusion: In conclusion, this study has shown the importance of diagnosis of strongyloidiasis among cancer patients at HUSM. Real-time PCR, lab-based IgG ELISA and IgG4-ELISA assays used in this study were able to detect the infection in these patients. The results showed that a combination of serum IgG and IgG4 are the best serological tests for screening of strongyloidiasis in cancer patients before and in between chemotherapy courses. Positive results may be tested by repeated stool microscopy and real-time PCR. Appropriate treatment can then be administrated and a follow-up screening for IgG and IgG4 can be performed.

Supervisor:
Dr Zeedah Mohamed
Co-supervisor:
Professor Rahmah Noordin

THE ASSOCIATION OF XPC POLYMORPHISM AND CIGARETTE SMOKING WITH SPORADIC COLORECTAL CANCER RISK IN A MALAYSIAN POPULATION

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Introduction: Cigarette smoke and dietary carcinogens are major environmental components that cause DNA damage and contribute to risk of Colorectal cancer (CRC). Single Nucleotide Polymorphism (SNPs) in nucleotide excision repair (NER) genes such as xeroderma pigmentosum complementing group C (XPC) may influence DNA damage repair and may potentially influence susceptibility to

environmental exposure and increase CRC susceptibility risk.

Objective: A case-control study was designed to investigate the genotype frequencies of *XPC* Lys939Gln polymorphism in Malaysian CRC patients and healthy controls and to determine the associated risk of this polymorphism and smoking with CRC predisposition.

Methods: We included 510 Malaysian individuals comprising of 255 histopathologically confirmed sporadic CRC patients as cases and 255 normal healthy individuals as controls. Peripheral blood samples of the study subjects were collected, DNA extracted, and genotyping of this polymorphism was performed using Polymerase Chain Reaction- Restriction Fragment Length Polymorphism (PCR-RFLP) technique. The association between polymorphic genotype and CRC predisposition was determined by computing Odds Ratio (OR) and assuming 95% confidence interval (CI).

Results: Genotype analysis showed the frequency of homozygous variant (Gln/Gln) genotype to be significantly higher in cases (16%) compared to controls (10%), ($P = 0.049$). On examining the association between variant genotype and CRC, the Gln/Gln genotype of *XPC* showed significantly higher risk association with CRC susceptibility (OR: 1.884, 95% CI: 1.082-3.277, $P = 0.025$). Moreover, the risk was markedly higher for those who were carriers of Gln/Gln variant genotype and were cigarette smokers, as well (OR: 3.409, 95% CI: 1.061-10.949, $P = 0.032$). Our result suggests that genetic variation Lys939Gln in *XPC* gene might modify the effect of smoking and contribute to sporadic colorectal cancer etiology. The result also highlights the importance of NER pathway in the modulation of an individual's risk for CRC.

Supervisor:

Professor Ravindran Ankathil

Co-supervisor:

Dr Sarina Sulong

VOLTAGE CLAMP ELECTROPHYSIOLOGY SCREENING OF SELECTED COMPOUNDS FROM *Zizyphus mauritiana* and *Myristica fragrans* ON SPECIFIC GABA RECEPTORS

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Introduction: GABA (A) receptors are essential for the balance between neuronal excitation and inhibition. The binding of GABA-positive ligands lead to conformational action and subsequently generate hyperpolarization process that is crucial for inhibitory action. Many compounds extracted from various plants have been identified as having positive effects on GABA current activities. This study was focused on the discovery of compounds extracted from *Zizyphus*

mauritiana leaves and *Myristica fragrans* mesocarp as the potential GABA modulator's candidate.

Objectives: This study was conducted to investigate the potential of methanol extract from *Zizyphus mauritiana* leaves and the essential oil from the mesocarp of *Myristica fragrans* in the modulation of GABA (A) receptor $\alpha_1\beta_2\gamma_2\delta$ subtype using automated fast perfusion of *Xenopus laevis* oocytes by means of two-microelectrode voltage clamp technique.

Methods: This study was divided into three parts: 1) the extraction and isolation of plant samples (from *Zizyphus mauritiana* and *Myristica fragrans*), 2) transcription of GABA (A) receptors RNA for expression in the *Xenopus laevis* oocytes, and 3) two microelectrodes voltage clamp recording using the fast automated perfusion technique.

Results: The modulation of I GABA from methanol crude of *Zizyphus mauritiana* leaves and the essential oil of *Myristica fragrans* mesocarp were studied at GABA concentrations eliciting 5-10% of the maximal response (EC_{5-10}). The crude extract of *Zizyphus mauritiana* did not modulate any change on I GABA. In contrast, the essential oil enhanced the inflow of Cl^- ions up to two times higher than the control. In the second assay, α -terpineol displayed the highest enhancement at 100 μM I GABA by $229.6 \pm 23.8\%$ and the maximum modulation was $326.3 \pm 43.8\%$ (500 μM) with the EC_{50} value $\approx 88 \mu M$. If compared to α -terpineol, myristicin exhibited the lower potentiation but only at 500 μM by $237.6 \pm 35.1\%$ of I GABA.

Conclusion: The components of the essential oil have a potential to modulate I GABA through the GABA (A) receptors $\alpha_1\beta_2\gamma_2\delta$ subtype, however, a similar observation could not be found in the crude extract of the leaves from *Zizyphus mauritiana*. α -Terpineol is the most potent and most efficient compound, displayed the highest current enhancement and the maximum modulation of GABA current.

Supervisor:

Professor Dr Jafri Malin Abdullah

Co-supervisor:

Associate Professor Dr Hasnah Osman

Dr Habsah Mohamad

THE EFFECTS OF COMBINATION OF BEHAVIOURAL INTERVENTION, NUTRITIONAL EDUCATION AND EXERCISE (COMBINE) PROGRAM ON HAEMOSTATIC MARKERS AMONG OBESE SUBJECTS

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Introduction: Obesity is a condition of excess body fat and it significantly increases the risk of coronary heart disease. Studies have shown that impaired haemostatic in obesity were

found to predict future development of coronary heart disease and numbers of coronary events.

Objectives: The purpose of this study was to determine the effects of COMBINE program on the changes of anthropometry parameters, biochemical profile and haemostatic markers in obese subjects.

Methods: The assessment was carried out on 28 obese subjects for 12-week duration. All subjects were required to give an informed consent before enrolling into the study. Anthropometric data were measured from the subjects selected before intervention (baseline) and after completing the program (post-intervention). About 15 mL of blood specimen was drawn from all subjects and tested for biochemical profile (e.g. fasting blood glucose and lipid profile) and haemostatic markers, such as fibrinogen, factor VII, thrombin activatable fibrinolytic inhibitors (TAFI), tissue plasminogen activators (t-PA), plasminogen activator inhibitors-1 (PAI-1), plasminogen and Heparin Cofactor II at baseline and at post-intervention. During this intervention period, the subjects were involved in a weekly program from 8.00 am until 1.00 pm on every Thursday at Hospital Universiti Sains Malaysia. The package of weight loss program consisted of brisk walking, dumb bell and easy-style of aerobic dance accompanied with nutrition education modules. Their food intake and physical activity were recorded in diary and they act as important tools in the behaviour modification method. Data analysis for this study was carried out using paired t test, SPSS 18.0. In order to correlate the haemostatic markers with other parameters, Spearman's rho correlation analysis was used. The significant level, $P < 0.05$ was used.

Results: The results showed that there was a significant reduction in the BMI at post-intervention ($33.22 \pm 0.67 \text{ kg/m}^2$) when compared to pre-intervention ($35.78 \pm 0.82 \text{ kg/m}^2$). Similarly, there was a significant reduction ($P < 0.05$) for other anthropometric data such as waist circumference and body composition analysis. Besides that there was also significant reduction in five haemostatic markers such as fibrinogen, factor VII, TAFI, t-PA, and PAI-1 at post-intervention when compared to baseline. Similarly, there was a significant reduction in triglyceride level at the baseline ($1.73 \pm 0.18 \text{ mmol/L}$) compared to post-intervention, ($1.24 \pm 0.07 \text{ mmol/L}$) ($P < 0.05$). Meanwhile there was a significant increased level of Heparin Cofactor II after the intervention ($119.89 \pm 3.58\%$) compared to baseline ($105.22 \pm 4.42\%$) ($P < 0.05$). But, there was no significant difference seen in plasminogen level as well as in cholesterol, high density lipoprotein, low density lipoprotein and fasting blood glucose levels.

Conclusion: In conclusion, the non-pharmacologic approach as an intervention is considered a successful program based on the positive findings such as reduced haemostatic hazard markers and improved other parameters such as physical parameters and biochemical markers. These markers should be further explored to be utilised as predictors to determine the effectiveness of a weight loss program and to predict the risk to develop cardiovascular disease in obese subjects.

Supervisor:

Dr Che Badariah Abd Aziz

Co-supervisors:

Associate Professor Dr Wan Zaidah Abdullah

Dr Rohana Abdul Jalil

NOSOCOMIAL BLOODSTREAM INFECTIONS SURVEILLANCE IN HOSPITAL UNIVERSITI SAINS MALAYSIA: A PRELIMINARY REPORT

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Introduction: Nosocomial infections, also called "hospital-acquired infections", are infections acquired during hospital cares which are not present or incubating at admission. Source of the infections are hands (fingerprint) and nasal of health workers and guardians, nasal and rectal of patients, patient's environment; ventilator tubing (in used), ventilator monitor, bed, incubator, linen, locker and formula milk, external environment; sink, air sampling (every 6 months), door handle and door freezer, and shared equipments; bed in treatment room, stethoscope, thermometer, laryngoscope, emergency trolley, dressing trolley and antiseptic solutions.

Objectives: Thus, the objective of this study was to determine the most likely source of nosocomial infections in selected wards.

Methods: The hospital has 700 beds, with two adult ICUs (medical and surgical), one neonatal ICU, 28 medical wards and 11 surgical wards, including two oncology wards. This surveillance was conducted from March 2008 to Jun 2009 and involved adult medical ICU, neonatal NICU and five other critical wards. Five organisms were included in this study, multiple resistant coagulase negative *Staphylococcus* (MRCoNS), multiple resistant *Staphylococcus aureus* (MRSA), *Acinetobacter baumannii* (Acba) or *Acinetobacter* spp. (Acsp), *Klebsiella pneumonia* (Klpn) and *Pseudomonas aeruginosa* (Psae) or *Pseudomonas* spp. (Pssp). Once the organism was isolated from blood culture/s, screening of patient's environment, shared equipment, hands and nasal of the health workers and guardians will be done. Identification was done by routine microbiological methods and antibiotic susceptibility testing was done according to Clinical Laboratory and Standards Institute (CLSI) and interpreted accordingly.

Results: A total of 908 screening samples were collected and 449 (49.4%) were positive for selected organisms. MRCoNS was the major organism detected which contributed to 270 (60.1%) of all positive cultures, followed by Acsp; 83 (18.5%), Klpn; 45 (10%), Psae; 37 (8.3%) and MRSA; 14 (3.1%). MRCoNS mostly found on finger print; 87 (32.2%), Ac sp, Klpn and Psae were mainly from linen; 13 (15.7%), 8 (17.8%) and 6 (16.2%), and MRSA were from nasal; 5 (35.7%).

Conclusion: Hands of healthcare workers and patient's environment are an important source of organisms. Strictly comply with hand hygiene is very important to prevent further spread of infections.

Supervisor:
Dr Zaidah Abdul Rahman
Co-supervisor:
Professor Madya Dr Habsah Hasan

ENVIRONMENTAL SURVEILLANCE FOR METHICILLIN RESISTANCE COAGULASE NEGATIVE STAPHYLOCOCCI (MRCONS) IN HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

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Introduction: Coagulase-negative staphylococci (CoNS) have emerged as an important pathogen in nosocomial infections. About 80–90% of CoNS isolates associated with hospital infections are methicillin-resistant coagulase-negative staphylococci (MRCoNS).

Objectives: The aims of this study were to determine the common reservoir of MRCoNS and its antimicrobial susceptibility patterns in our hospital.

Patients and Methods: The surveillance was conducted from March 2008 to Jun 2009 and involved adult medical ICU, neonatal NICU and three other critical wards. After isolation of MRCoNS from blood culture/s, screening of patient's environment, shared equipment, hands and nasal of the health workers and guardians will be done. Bacterial identification was done by routine microbiological methods and antibiotic susceptibility testing was done according to Clinical Laboratory and Standards Institute (CLSI) and interpreted accordingly.

Results: A total of 248 MRCoNS were isolated during the study period. Isolates from blood were (3.2%), fingerprints of medical staff and guardian; (32.7%), nasal of medical staff; (18.1%), nasal and rectal of the patients; (10.1%) and (1.2%) and patient's environment and external environment; (34.7%). Out of 248 MRCoNS isolated, *Staphylococcus epidermidis* were the predominant species (36.3%), followed by *Staphylococcus haemolyticus*, (23.8%), *Staphylococcus hominis*, (13.7%), and *Staphylococcus warneri* (11.7%). Majority of isolated MRCoNS were susceptible to clindamycin, trimethoprim-sulfamethoxazole, rifampin, ciprofloxacin, teicoplanin, and linezolid.

Conclusion: *Staphylococcus epidermidis* is the main reservoir for MRCoNS. Environmental surveillance provides information about species-specific differences that are useful in healthcare effectiveness.

Supervisor:
Dr Zaidah Abdul Rahman
Co-supervisor:
Professor Madya Dr Habsah Hasan

ENVIRONMENTAL AND CARRIER SURVEILLANCE IN INTENSIVE CARE UNIT: HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Nosocomial infection is the most frequent and widely studied adverse effect of hospitalization, and a major public health problem in developed countries due to its morbidity and mortality. Source of the infections are either from endogenous, health care workers, guardians, patient's environment, hospital environment or shared equipments.

Objective: The objective of this study was to determine the bacterial burden in our Intensive Care Unit.

Patients and Methods: The surveillance was conducted from March 2008 to Jun 2009 and involved adult medical ICU and neonatal NICU. Five common nosocomial pathogens were included in the study, methicillin resistant coagulase negative *Staphylococcus* (MRCoNS), methicillin resistant *Staphylococcus aureus* (MRSA), *Acinetobacter* spp. (Acsp), *Klebsiella pneumoniae* (Klpn) and *Pseudomonas aeruginosa* (Psae). Once the organism was isolated from blood culture/s, screening of healthcare workers, guardians, and environment were done. Bacterial identification was done by routine microbiological methods and antibiotic susceptibility testing was done according to Clinical Laboratory and Standards Institute (CLSI) and interpreted accordingly.

Results: A total of 443 screening samples were collected and 228 (51.5%) were positive for selected organisms. MRCoNS was the major organism detected which contributed to 130 (57.0%) of all positive cultures, followed by Acsp; 41 (18.0%), Klpn; 31 (13.6%), Psae; 16 (7.0%) and MRSA; 10 (4.4%). MRCoNS and Acsp mostly found on finger print; 52 (40.0%) and 7 (17.1%), Klpn were found on rectal swab; 5 (16.1%), Psae were found on ventilator tubing; 5 (45.5%) and MRSA were from nasal; 4 (40.0%).

Conclusion: Hands of healthcare workers and patient's environment are possible important source of nosocomial infections.

Supervisor:
Dr Zaidah Abdul Rahman
Co-supervisor:
Professor Madya Dr Habsah Hasan

A CLONALITY STUDY OF *Acinetobacter baumannii* IN HOSPITALIZED PATIENTS AND THEIR ENVIRONMENT

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Introduction: *Acinetobacter baumannii* complex are opportunistic pathogens and have become increasingly prevalent in hospital infections. *A. baumannii* can survive for long periods on hospital environmental surfaces and air.

Objectives: This study was conducted to determine the genetic relatedness of *A. baumannii* isolated from patients, hospital environment, healthcare workers and visitors.

Methods: This is a prospective surveillance study conducted in an 800-bedded tertiary teaching hospital, Malaysia, from March 2008 to Jun 2009 and involved adult medical ICU, neonatal NICU and three other critical wards. All *A. baumannii* isolates from bacteraemia were collected. Screening of *A. baumannii* was performed, which include fingerprint of healthcare worker, nasal swabs of patient's guardians and swabs of the hospital environment. The clonality of these isolates were analysed by pulsed field gel electrophoresis (PFGE) and the genetic relatedness were compared.

Results: A total of 80 *A. baumannii* was isolated during the study period. Sixty-five of *A. baumannii* isolates were recovered from the environment/screening, and 15 were from patients' blood. There were 57 PFGE patterns with two predominant genotypes of *A. baumannii* were detected in the adult medical ICU. These genotypes were found among patients and were widely distributed in the ICU's environment. Inter-ward transmission was documented. *A. baumannii* isolated from patients demonstrated high degree of resistant to all antibiotics tested except for colistin, as compared to environmental/screening isolates.

Conclusion: The study revealed widespread contamination and transmission of *A. baumannii* in the hospital environment. It confirms the need for more effective environmental cleaning and strengthening hand hygiene practices.

Supervisor:
Dr Zaidah Abdul Rahman
Co-supervisor:
Professor Madya Dr Habsah Hasan

POLYMORPHISM IN THE TUMOR NECROSIS FACTOR ALPHA PROMOTER REGION AND ITS INFLUENCE ON COLORECTAL CANCER PREDISPOSITION RISK IN MALAYSIAN POPULATION

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Introduction: Colorectal cancer (CRC) is one of the most common cancers in developed countries and getting more attention in developing countries for its morbidity and mortality. Epidemiological observations, animal and clinical studies have established an association between continuous inflammatory condition and CRC. A role for TNF in the pathogenesis of inflammatory bowel disease (IBD) has been established. *TNF-α* is present at high level in intestinal mucosa of patients with IBD.

Objective: A case control study was designed to investigate the *TNF-α* -308 G > A polymorphism allele frequencies and to determine the influence of the polymorphic genotype on sporadic CRC susceptibility risk in Malaysian population.

Materials and Methods: Peripheral blood samples of 164 normal controls and 161 clinically and histopathologically confirmed CRC patients were genotyped for *TNF-α* -308 G > A polymorphism employing allele specific PCR. The relative associations of various genotypes with CRC susceptibility risk was determined by calculating Odds Ratios. Corresponding chi-square tests on the CRC patients and controls were carried out and 95% confidence interval (95% CI) were determined using Fisher exact tests.

Results: On comparing the frequencies of genotypes of patients and controls, the homozygous variant AA was significantly higher in CRC patients ($P = 0.030$) compared to controls. On investigating the association of the polymorphic genotypes with CRC susceptibility risk, the homozygous variant *TNF-α* -308 AA showed significantly increased risk with OR 2.5842.

Conclusion: Our results suggest that, polymorphic genotype of inflammation response gene *TNF-α* is significantly associated with CRC susceptibility risk and could be considered as a high risk variant for CRC predisposition.

Supervisor:
Professor Dr Ravindran Ankathil
Co-supervisor:
Dr Sarina Sulong

THE EFFECTS OF *Stichopus Variegatus* CRUDE EXTRACTS ON ACUTE CONTUSIVE RAT SPINAL CORD INJURY MODEL: IN VITRO AND IN VIVO STUDIES

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Introduction: Sea cucumbers from Pulau Perhentian, Malaysia are well known as potential marine edible food sources and possess medicinal value to the Malaysian community. Despite the presence of small industries and its usage amongst local folks, there is little work done on its biological activity, especially on the central nervous system.

Objectives: The objectives of this study were to study the effects of *S.variegatus* crude extracts on proliferation of rat astrocytes cell lines, the effects of intrathecal *S.variegatus* crude extracts on the locomotor performances and motor activity of the contused spinal cord injury model and to analyze the effects of intrathecal *S.variegatus* crude extracts on histopathology of experimental rat tissues and its correlation with BBB locomoting score responses.

Methods: *Stichopus variegatus* (SV) were harvested, processed, and extracted in the laboratory and were evaluated on their proliferative activity on rat astrocytes cell lines (in vitro), as well as contusive spinal cord injury in a rat model (in vivo).

Results: In vitro analysis of SV extract showed proliferative activity of rat astrocytes cell line at 5 µg/mL and 10 µg/mL. The SV extracts showed a dose dependent effect. The EC₅₀ of the Perhentian SV extract was 5.18 µg/ml. In vivo analysis of SV extracts demonstrated that Methylprednisolone and 10 µg/kg showed an improvement of the Basso Beattie Bresnahan (BBB) score of a rat contused spinal cord injury at day 14 ($P = 0.04$), however there were no differences on the distance travelled by each of the rats on day 14 ($P > 0.01$). Methylprednisolone and 10 µg/kg of SV extract reduced intramedullary hemorrhage compared to the control group ($P < 0.05$). Correlation analysis demonstrated a significant negative correlation between the BBB Locomotor scores and gray matter hemorrhage ($r^2 = -0.99$) and white matter hemorrhage ($r^2 = -0.93$). Methylprednisolone and 10 µg/kg of SV extract were also found to spare white matter (74.2% and 67.7% respectively) after 14 days of injury compared to the control group (33%). The white matter sparing was directly proportional to behavior improvement ($r^2 = 0.91$).

Conclusion: These findings lead to several conclusions; SV extract with 10 µg/kg are suggested to promote repair of an acute contused spinal cord injury in rats by improving motor function, reducing gray matter and white matter intramedullary hemorrhage, and sparing white matter after the spinal injury.

Supervisor

Professor Dr Jafri Malin Abdullah

Co-supervisors:

Professor Syed Mohsin Syed Sahil Jamalullail

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MICROBIOLOGICAL AND ANGIOGENIC PROPERTIES OF BURN INJURIES TREATED WITH TUALANG HONEY VERSUS SILVER-BASED DRESSING

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Introduction: Honey as a dressing for burn wounds has been widely used. However the potential and the underlying mechanism of action of Tualang honey has not been studied. This project studied the microbiological activities and angiogenic properties of Tualang honey in the treatment of burn injuries.

Methods: Twenty consented patients with partial thickness burn wound were included in this study. These patients were randomly treated either with hydrofiber®-Tualang honey dressing ($n = 10$) or hydrofiber®-Ag ($n = 10$) dressing. Nine different microorganisms were identified from the swab samples collected. Five were Gram positive namely, Staphylococci, coagulase negative staphylococci, *Bacillus subtilis*, swarming *Proteus* spp. and Streptococci. Whereas, Gram negative microorganisms were *Enterobacter cloacae*, *Acinetobacter* spp., *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. Total bacterial count decreased on day 6 and onwards.

Results: In the in-vitro antibacterial study, hydrofiber®-Ag and hydrofiber®-manuka honey dressings gave better zones of inhibition for gram-positive bacteria as compared to hydrofiber®-Tualang honey dressing. However, comparable results were obtained against gram negative bacteria tested with hydrofiber®-manuka honey and hydrofiber®-Tualang honey dressing. Treated burn tissue samples ($n = 13$) were harvested and tested for the apoptosis using flowcytometry. Only two from the thirteen tissue samples were managed to be cultured and tested for the VEGF and PDGF. The antibacterial properties and apoptosis of partial thickness burn wound treated with hydrofiber®-Tualang honey and hydrofiber®-Ag dressings were comparable.

Conclusion: Growth of fibroblast culture from partial thickness burn wound varied in proliferation rate when treated with hydrofiber®-Tualang honey or hydrofiber®-Ag dressings. Fibroblast culture from partial thickness burn treated with hydrofiber®-Ag dressing showed expression of VEGF and PDGF.

Supervisor:

Professor Dr Ahmad Sukari Halim

Co-supervisors:

Dr Kirnpal Kaur Banga Singh

Dr Aravazhi Ananda Dorai

FREQUENCY OF G71R AND DETECTION OF A NOVEL MUTATION IN EXON 1 OF THE UGT1A1 GENE IN A MALAY POPULATION

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Introduction: Neonatal hyperbilirubinemia is most likely multifactorial in etiology which are including of rhesus or ABO Incompatibility, G6PD deficiency, breast feeding, and mutation in *UGT1A1* gene. Mutation in *UGT1A1* gene, clinically presenting as Crigler Najjar syndrome and Gilbert syndromes are also well known causes related to neonatal jaundice (NNJ) to be appear. Previous reports from Malaysian, Indonesia and Singaporean population have shown the present of mutation in *UGT1A1* gene with different variants may play a significant role in the occurrence NNJ. In Malaysian population, mutation in *UGT1A1* gene has been reported in a small number of Malay subjects. Exon 1, where the G71R mutation is located, deserves further investigation in a larger group of Malay subjects.

Methods: This cross-sectional study was conducted in Hospital Universiti Sains Malaysia (HUSM) and 200 subjects were recruited in this study (113 jaundice and 87 non-jaundice samples). One milliliter of whole blood was collected for both groups: Jaundice (venipuncture) & non-jaundice (umbilical cord). Later, DNA was extracted from blood through DNA extraction method by using commercial kit, Qiagen kit. Next, to amplify the interest fragment in the exon 1 of *UGT1A1* gene, polymerase chain reaction (PCR) was performed. All the primers were design by using Primer 3 software. To screen the present of mutation or Single nucleotide polymorphism (SNP), denaturing high performance liquid chromatography (DHPLC) was performed. If the double peak or known as heteroduplex peak was present in the sample, sample will proceed to sequencing procedure. Finally, the data will be analyze by using Science Package Social Software (SPSS) version 14.0.

Results: Out of 200 subjects recruited in this study, 20 subjects (13/113 or 11.5% from jaundice group) (7/87 or 8.0% from control group) were carrying a mutation in exon 1 of the *UGT1A1* gene. Heteroduplex samples that appear in DHPLC procedure for the first runs were re-run and heteroduplex peak was observed in the entire 20 samples. All the 20 samples were confirmed to be identifying as G71R mutation with heterozygous form in sequencing procedure. However, there is no significant difference was obtain between both jaundice and non-jaundice group. One sample showed a novel mutation

at nucleotide number 774 where cause the nucleotide change from Thymine (T) to Adenine (A) in jaundice group with heterozygous mutation form was appear in sequencing method.

Conclusion: This study showed a high prevalence in Malay population of G71R mutation and a novel mutation was discovered.

Supervisor:

Professor Dr Hans Van Rostenberghe

Co-supervisors:

Associate Professor Dr Narazah Yusoff

Professor Dr Zilfalil Alwi

THE mRNA EXPRESSION OF INDUCIBLE NITRIC OXIDE SYNTHASE IN KELOID USING TOCOTRIENOL-RICH FRACTION IN PRIMARY HUMAN EPIDERMAL KERATINOCYTES AND PRIMARY HUMAN DERMAL FIBROBLAST CULTURES

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Introduction: Keloid is characterized by excess collagen deposition that can damage healthy tissue. With the widespread use of Vitamin E-tocopherols based product and the discovery of tocotrienol (T3) potential to treat various skin injuries, there are possibilities of tocotrienol-rich fraction (TRF) to intercede normal, hypertrophic, or keloid scarring during the inflammatory process. However, there is a lack of scientific evidence to validate the efficacy and the therapies of TRF in scar prevention.

Objectives: This study was carried out to evaluate the beneficial effects of TRF in wound healing and its possible stimulation towards mRNA expression of inducible nitric oxide synthase (iNOS) in keloid human skin keratinocytes and fibroblasts.

Methods: Primary human epidermal keratinocytes (pHEK) and primary human dermal fibroblasts (pHDF) were successfully established using cell dissociation method. Verification of pHEK and pHDF was conducted using Cytokeratin-6 (CK6), Involucrin, Heat Shock Protein-47 (HSP47) and Fibroblast Surface Protein (FSP) markers using immunocytochemistry analysis. The effect of TRF on pHEK and pHDF were determined by using MTT assay. Finally, the mRNA expression of iNOS in only primary normal human dermal fibroblasts (pNHDF) and primary keloid human dermal fibroblasts (pKHDF) treated with TRF were evaluated using real time PCR machine.

Results: Primary normal human epidermal keratinocytes (pNHEK) achieved higher cellular growth rate compared to primary keloid human epidermal keratinocytes (pKHEK). Whilst, pKHDF exhibited linear growth and

sustained higher cellular growth rate compared to pNHDF. pHEK cultures were positive for the presence of CK6 and Involucrin whereas HSP47 and FSP were found in pHDF cultures. TRF ranged from 2.85 µg/ mL to 180 µg/ mL. TRF (45 µg/ mL to 180 µg/ mL) was found to inhibit the growth of pHEK while for pHDF was at 90 µg/mL at 72 hours. At lower concentrations (2.8-22.5 µg/mL), TRF increased pHEK cell growth at 24 and 48 hours of incubation but have no significant effect in pHDF viability at all time intervals. TRF at 2.8 µg/mL has been found to reduce the mRNA expression of iNOS at 24 hours, which may in turn suppress the production of nitric oxide (NO) by pKHDF.

Conclusions: The observed suppression and growth inhibition effect in pHEK and pHDF cultures may be caused by the antiproliferative and antioxidant activities of TRF. Whereas, the reduction of iNOS mRNA level in pKHDF may suggest that TRF possess antioxidant and antifibrogenic effect. This finding showed that TRF may play a role in keloid intervention by suppressing the mRNA expression of iNOS.

Supervisor:

Professor Dr Ahmad Sukari Halim

Co-supervisors:

Associate Professor Dr Aida Hanum Ghulam Rasool

Associate Professor Dr Shaharum Shamsudin

MUTATIONAL ANALYSIS IN N- AND C- TERMINI OF *RB1* GENE AMONG SPORADIC RETINOBLASTOMA PATIENTS IN MALAYSIA

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Background: Retinoblastoma (RB) is childhood malignant tumors with majority of cases affect children under 5 years old. RB is caused by mutation in *RB1*, a tumor suppressor gene which is located on chromosome 13q14. The aim of this study is to detect mutations and single nucleotide polymorphisms (SNPs) in N- and C-terminus of *RB1* in Malaysian children with RB, as well as its association with laterality and staging of this disease.

Methods: Peripheral blood leukocytes were collected from 66 retinoblastoma patients and 66 healthy volunteers. Tumor tissue specimen also collected from three available patients. The DNA was extracted using commercially available extraction kit. PCR were conducted using self-designed primers. The mutational analysis was performed using DHPLC and direct sequencing method.

Results: Two nonsense mutations and four SNPs were detected in N-terminus, but none in C-terminus. The nonsense mutations; Arg320X and Glu323X were detected in three children with RB. A novel SNP, IVS1-3T > G was identified in this study. There was a significant different in allele frequency

of IVS4-77G > A between patients and healthy control group ($P = 0.044$). There was no significant association between polymorphisms with laterality and staging of RB.

Conclusion: Arg320X and Glu323X play as important role in the pre-disposition to RB. SNP IVS4-77G > A also have a potential for genetic defect RB in our population. However, a larger sample size is needed for more confirmation. The other SNPs have more potential to be used as genetic variant markers for population studies.

Supervisor:

Associate Professor Dr Liza Sharmini Ahmad Tajudin

Co-supervisors:

Professor Zilfalil Alwi

Associate Professor Dr Ariffin Nasir

POPULATION GENETIC STRUCTURE OF PENINSULAR MALAYSIA MALAY SUB-ETHNIC GROUPS

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Introduction: In Peninsular Malaysia, the Malays consist of various sub-ethnic groups which are believed to have different ancestral origins based on their migrations centuries ago. Patterns of modern human population structure are helpful in understanding the history of human migration and admixture.

Objective: This study was conducted with the aim of identifying and analyzing the genetic structures of four Malay sub-ethnic groups namely *Melayu Kelantan*, *Melayu Minang*, *Melayu Jawa* and *Melayu Bugis*.

Methods: The multilocus genotype data of 54,794 single nucleotide polymorphisms (SNPs) for all of the Malay sub-ethnic groups were generated using Affymetrix 50K Array chip and analyzed by distance-based clustering methods. To the best of our knowledge this is the first study conducted on these four Malay sub-ethnic groups and the analysis of genotype data of these four groups were compiled together with 11 other populations' genotype data from Indonesia, China, India, Africa, and indigenous populations in Peninsular Malaysia obtained from the Pan-Asian SNP database.

Results: The phylogeny of populations showed that all of the four Malay sub-ethnic groups are separated into at least three different clusters. The *Melayu Jawa*, *Melayu Bugis* and *Melayu Minang* have a very close genetic relationship with Indonesian populations indicating a common ancestral history, while the *Melayu Kelantan* formed a distinct group on the tree indicating that they are genetically different from the other Malay sub-ethnic groups.

Conclusion: We have detected genetic structuring among the Malay populations and this could possibly be

accounted for by their different historical origins. Our results provide information of the genetic differentiation between these populations and a valuable insight into the origins of the Malay sub-ethnic groups in Peninsular Malaysia.

Supervisor:

Professor Dr Zilfalil Alwi

Co-supervisor:

Dr Mohammed Rizman Idid

STUDIES ON NITRIC OXIDE (NO), CITRULLINE-NO CYCLE ENZYMES, GLUTAMINE SYNTHETASE AND OXIDATIVE STATUS IN EPILEPSY RAT MODELS

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Introduction: Nitric oxide (NO) is postulated to be involved in the pathophysiology of many epilepsy models resulting from increased action of excitatory neurotransmitter namely glutamate. Three types of nitric oxide synthase isoforms (NOS) are responsible for the synthesis of NO from L-arginine. The citrulline generated as a by product can be recycled to arginine by successive actions of argininosuccinate synthetase (AS) and argininosuccinate lyase (AL) via the citrulline-NO cycle. Reactive Oxygen Species (ROS)/Reactive Nitrogen Species (RNS) have been implicated in the pathogenesis of various neurological disorders including epilepsy.

Objective: The Objective of the study was to investigate the involvement of NO, citrulline-NO cycle enzymes, glutamine synthetase and oxidative status in the cerebral cortex (CC), cerebellum (CB) and brainstem (BS) of kainic acid (KA) induced epilepsy rat models.

Methods: Epilepsy was induced by subcutaneous injection of 15 mg/kg of KA. Total of 54 rats were divided into three groups which were acute (sacrificed after two hours of KA injection), chronic group (sacrificed after five days of KA injection) and control group (received normal saline). The concentration of nitrate/nitrite (NO_x), thiobarbituric reactive substances (TBARS) and total antioxidant status (TAS) were estimated along with measurement activities and mRNA expression of NOS, AS, AL, glutamine synthetase (GS) and activity arginase.

Result: The results showed a high concentration of NO and increased activity of NOS during acute and chronic epilepsy groups and highest being in CB region. The activities of AL and AS were also increased while activity of GS was decreased in both experimental groups compared to control group. No changes of arginase activity were seen in acute group but decreased in the chronic group. TBARS formation was high in chronic rats while the concentration of TAS reduced in experimental groups compared to control. RT-PCR analysis showed that iNOS and AL mRNA expressions were greater

in chronic rats. No significant differences were observed for AS and nNOS mRNA expressions in experimental groups. GS mRNA expression was decreased in all brain regions of chronic group compared to control.

Conclusion: The findings of this study demonstrated the increased formation of NO molecules by NOS, suggesting the roles of NO in the acute and chronic conditions of KA induced epilepsy. The increased activities AS and AL indicate the continuous production of arginine under this condition. Excessive amounts of NO cause toxicity, lowered the antioxidants status and decreased the activity of GS causing continuation of excitotoxicity and may be leading to neurodegeneration.

Supervisor:

Associate Professor Dr Mummy Swamy

Co-supervisor:

Dr Zulkarnain Bin Mustapha

EXPRESSION OF SEMA4D AND ITS RECEPTOR PLEXIN-B1 IN INVASIVE BREAST DUCTAL CARCINOMA IN RELATION TO TUMOR ANGIOGENESIS AND TUMOR-ASSOCIATED MACROPHAGES

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Introduction and Objectives: Cumulative experimental and clinical studies have shown involvement of Sema4D, a Class IV semaphorin, and its receptor, Plexin-B1 in tumor progression. Particularly, regulation of monocytic cells by Sema4D, and tumor angiogenesis via Sema4D/Plexin-B1 receptor system are of great interest. This study characterized the expressions of Sema4D and Plexin-B1 in human invasive breast ductal carcinoma and evaluated their relationships with other pertinent clinicopathological parameters in general, and with tumor-associated macrophages and tumor angiogenesis in particular.

Methods: Expressions of Sema4D and Plexin-B1 in 94 patients diagnosed of invasive ductal carcinoma, NOS were explored immunohistochemically on paraffin-embedded tissue sections. For each section, three best-stained hotspots and the whole-slide tumor area were evaluated using an intensity distribution score (IDS), a modified H-score system. In addition, tumor-associated macrophages highlighted by anti-CD68 antibody were evaluated with reference to their histological locations whether in the tumor nests or the tumor stroma. Microvessels were immunostained with anti-CD34 antibody and counted for microvessel density.

Results: Invasive ductal carcinomas variably expressed Sema4D and Plexin-B1. Their expressions showed weak significant correlation when the whole-slide IDSs were

evaluated ($r = 0.208$, $P = 0.045$). The average 3-hotspot IDS of Sema4D expression showed positive association with Her-2 expression ($P = 0.032$), while the whole-slide IDS was associated with positive hormonal receptor status ($P = 0.022$). High average 3-hotspot IDS of Plexin-B1 expression had higher numbers of lymph node metastasis ($P = 0.032$). Limiting to estrogen receptor positive cases or Her-2 overexpressed cases, high Plexin-B1 expression by the whole-slide assessment was paradoxically associated with absence of lymph node metastasis ($P = 0.009$ and $P = 0.039$, respectively). In relation to tumor-associated macrophages, higher levels of Sema4D expression by the whole-slide assessment were observed in lower grades of tumor stromal macrophages ($P = 0.001$), but no such relationship was observed for Plexin-B1. Both Sema4D and Plexin-B1 expressions had no relationship with the tumor nest macrophage counts. With regard to tumor angiogenesis, Plexin-B1 expression assessed by 3-hotspot methodology demonstrated weak positive correlation with microvessel density ($r = 0.206$, $P = 0.047$). Sema4D expression was not correlated to microvessel density.

Conclusions: Heterogeneity of Sema4D and Plexin-B1 expressions in human invasive breast ductal carcinoma was demonstrated. Their expressions were associated with a few traditional predictive and prognostic factors. Sema4D expressed in tumors appeared to have an inhibitory effect on the tumor stromal macrophages. In contrast to experimental studies, proangiogenic properties of Sema4D could not be validated. Focal expression of Plexin-B1 might be a weak marker for a more angiogenic tumor. However, Plexin-B1 expression was not associated with tumor-associated macrophages.

Supervisor:

Dr Sharifah Emilia Tuan Sharif

IMMUNOEXPRESSIONS OF E-CADHERIN AND β -CATENIN AND CORRELATION WITH TUMOUR GRADING IN PRIMARY OVARIAN CARCINOMA IN HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN

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Introduction: E-cadherin and β -catenin, cell adhesion molecules (CAM's) are shown to be involved in tumour progression.

Objectives: This study aims to analyze immunoexpression of E-cadherin and β -catenin in surface epithelial ovarian carcinoma and evaluate its association with histological subtype, tumour grade and other important clinicopathological parameters. Tissue sections were obtained

from archival blocks from HUSM for the duration of 13 years from 1998 to 2010.

Methods: Expressions of both markers were analyzed immunohistochemically in 88 patients on paraffinized tissues. The tumor was evaluated and scored in hot spots according to intensity and proportion of cells stained. Expression was categorized as either positive or negative using median as cutoff positivity for statistical analysis.

Results: E-cadherin and β -catenin were variably expressed by tumour cells. The distribution of both markers was skewed (E-cadherin-mean 49.17, standard deviation 33.342, median 50.00; β -catenin -mean 34.23, standard deviation 34.032, median 20.00). In 64.7% of high grade ovarian carcinoma, both E-cadherin and β -catenin expression were lost ($P = 0.026$). The grade of serous carcinoma was significantly associated with negative expression of both E-cadherin and β -catenin, in which 90.0% of the high grade cases lost expression of both markers ($P = 0.004$). In early FIGO stage (FIGO I and II), 27.8% of cases had lost expression of both markers, whereas 72.2% of the patients maintained expression of one of the markers ($P = 0.037$). This association was not seen in advanced FIGO stage. No significant association between E-cadherin and β -catenin expressions and age, race, peritoneal deposits and capsular breach ($P > 0.05$) were observed.

Conclusion: Ovarian carcinomas with loss of expression of both E-cadherin and β -catenin might behave more aggressive clinically as they tend to have higher grade and stage.

Supervisor:

Associate Professor Dr Mutum Samarendra Singh

CORRELATION OF APOPTOTIC RELATED PROTEINS AND CLINICOPATHOLOGICAL PARAMETERS IN LIPOSARCOMA

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Introduction: Information on prognostic factors is important to setup a proper therapeutic modalities for soft tissue sarcomas. Tumor growth depends on two distinctive pathways: cell proliferation and apoptosis. Liposarcoma is one of the most common soft tissue sarcomas (account about 20–30%).

Objectives: To look into apoptotic activity of LPS as single entity. In relation to that, we also try to correlate the relationship between apoptotic activity and the clinicopathological parameters.

Methods: A cross-sectional study was conducted from April 2009 to October 2011. 45 cases of different histologic subtypes of LPS were included in this study. Tissue sections

that were retrieved from archived tissue blocks were stained with immunohistochemical stain for Bcl-2 and Bax proteins.

Results: Our study showed that higher expression of Bax in the tumor cells (71.1%) was seen compared to the expression of Bcl-2 (48.9%). Significant correlation between the expression of Bcl-2 and tumor grade ($P < 0.005$) and histologic subtypes ($P < 0.001$) were found. At the same time Bax expression is higher in LPS and significantly correlate with histological grade and the site of the tumors ($P < 0.048$) and histologic grade ($P < 0.014$). However, there were no correlation between apoptotic activity and tumor size, tumor depth and surgical margins.

Conclusion: Apoptotic activity plays an important role in tumor developments and progression. Immunohistochemical detection of the proteins used in this study might be useful as markers for predicting the prognosis in LPS.

Supervisor:

Dr Thin Thin Win@ Safiya

THE RELATIONSHIP OF NBS1 EXPRESSION WITH WHO GRADING AND TNM STAGING OF NASOPHARYNGEAL CARCINOMA

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Introduction: Nasopharyngeal carcinoma (NPC) is listed as the sixth most common cancer in Malaysia. It is highly prevalent in Chinese descendants and is associated with Epstein-Barr virus. Many studies were done to understand the genetic basis of tumour genesis in NPC. One of the theories is that genetic instability play a role in the generation of NPC. NBS1 gene is linked to genetic instability as well as tumour proliferation; and is found to be upregulated in NPC (Sengupta, et al., 2006). However, there is limited data on the immunohistochemical expression of NBS1 in NPC. This study is carried out to identify the expression of NBS1 in NPC cases. In addition, this study is also looking at NBS1 expression in relation to its pathological (WHO) grading and TNM staging.

Objectives: The aims of this study were to determine the expression of NBS1 protein in NPC, as well as to compare them with WHO grade; and TNM and clinical stage.

Materials and methods: 71 archived tissue blocks of NPC cases were included in this study after applying the inclusion and exclusion criteria. NBS1 protein expression was identified using immunohistochemical staining. All the cases were reclassified using the current WHO grading scheme. The clinical stage and tumour-node-metastatic stage were classified using the sixth edition of the Union for International Cancer Control/American Joint Committee on Cancer staging system.

Results: 71 cases were included (43 Chinese, 28 Malay) with the majority of patients were males (ratio of 7.9 to 1). Median age was 55 years old (52.8 ± 11.6). Most common clinical presentation for NPC is neck swelling (66.2%). Unilateral symptom was found in 52.1% with a slight preponderance to the left side being 51.4% compared to the right. Majority of cases were in the nonkeratinizing type according to the WHO grading being 90.4% (differentiated subtype was 56.1% and undifferentiated subtype was 43.9%). Majority of cases were in the early tumour stage (T1 and T2) which accounted for 80.3%. In contrast, the late clinical stage (stages III and IV) was more common being 52.1%. Majority of the cases were with nodal positivity (N1, N2, and N3) which accounted for 80.3%. NBS1 expression was found in 90.1% of cases while over-expression was detected in 38.0%.

Conclusion: Significant association was noted between NBS1 over-expression and ethnicity (P value of 0.029). However, there was no significant relationship between over-expression of NBS1 with gender, age, side of symptom, WHO grading, clinical and TNM staging.

Supervisor:

Dr Md Salzihan Md. Salleh

Co-supervisor:

Dato' Dr Norain Karim

IMMUNOHISTOCHEMICAL EVALUATION OF ANGIOGENESIS IN GIANT CELL TUMOR OF BONE PATIENTS IN HUSM

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Introduction: Giant cell tumor (GCT) of bone is a discrete clinical- radio pathological entity with the biologic potential for locally aggressive growth and rare metastases. Specific microscopical or radiological findings that reliably predict behavior have remained elusive. However, a recent fact suggests the role of VEGF in tumor growth and invasion in GCT of bone. Wherefore, in this study, we directed our attention to the clinical significance of VEGF expression and addressed the association of VEGF expression in the primary tumor with the local intratumoral microvessel density, clinicopathological features for patients with giant cell tumor of bone.

Objectives: To study the angiogenic activity in giant cell tumor of bone, by means of VEGF expression and the microvessel density (MVD) in the endothelial cells using immunohistochemical staining, and to study the relationship of the expression with the disease progression.

Material and methods: A cross sectional study was conducted from April 2009 to October 2011. 54 cases of GCT of bone were included in this study. Tissue sections that were retrieved from archived tissue blocks were stained with

immunohistochemical stain for VEGF protein and CD34 for microvessel density.

Results: Our study revealed that thirty nine of the cases showed a positive staining for VEGF in the tumor cells (72.2%). There was a significant association between the expression of VEGF in the tumor cells with tumor stage ($P = 0.003$). There was also a significant association between the expressions of VEGF in the tumor cells with the presence of pulmonary metastases ($P = 0.015$). However, VEGF expression was not associated with intratumoral microvessel density and tumor site. Our study demonstrates that the intratumoral microvessel density was not associated with tumor site, tumor stage and the presence of pulmonary metastases.

Conclusion: GCT of bone is frequently hypervascular; VEGF secreted by tumor cells elicits angiogenesis, which significantly contribute to the development of pulmonary metastasis. This provided confirmation for the prognostic significance of VEGF in predicting the behavior of GCT of bone and also the basis for therapeutics strategy targeting angiogenesis.

Supervisor:

Dr Md Salzihan Md Salleh

Co-supervisor:

Dr Wan Faisham Wan Ismail

SERUM ADIPONECTIN IN OVERWEIGHT AND NORMAL WEIGHT ADOLESCENTS AND ITS CORRELATION WITH INSULIN RESISTANCE AND LIPID PROFILE

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Introduction: Overweight has become a common health problem in all over the world. Adolescent age is a critical period in determining the adulthood obesity and its adverse health consequences. Adiponectin, an adipocytokine which has a close association with metabolic profiles of obesity-related diseases particularly insulin resistance and lipid variables. Therefore this study was carried out to investigate those associations in Malaysian adolescent population.

Objective: This study aimed to compare the levels of serum adiponectin between overweight and normal weight adolescents and the correlation of adiponectin with insulin resistance and lipid profile particularly HDL cholesterol as well as triglycerides in overweight group and normal weight group.

Methods: A comparative cross-sectional study was carried out on 58 overweight adolescents and 60 normal weight adolescents attended National Training Service Programme who fulfilled the inclusion and exclusion criteria. Serum adiponectin, fasting serum insulin, fasting serum lipid profile and fasting plasma glucose were analyzed. Insulin

resistance was obtained by HOMA-IR formula.

Results: The mean adiponectin concentration was significantly lower in overweight subjects compared to normal weight subjects ($P = 0.005$). The mean plasma glucose concentration was higher in normal weight group than overweight group ($P = 0.04$). The mean total cholesterol and mean HDL cholesterol concentrations were lower in overweight subjects compared to normal weight subjects ($P = 0.008$, $P < 0.001$). There was no significant correlation between adiponectin and HOMA-IR in overweight group and normal weight group ($P = 0.946$, 0.224). Besides, no correlation was found between adiponectin and TG in both groups ($P = 0.55$, 0.383). However there was a significant correlation noted between adiponectin and HDL-cholesterol in overweight group ($P = 0.004$).

Conclusion: Our study supports that serum adiponectin has a role in the treatment obesity and its related complications. This is evidenced by the lower level of this hormone in overweight subjects and the significant positive correlation between adiponectin and HDL cholesterol in overweight subjects.

Supervisor:

Dr Win Mar Kyi

Co-supervisor:

Professor Dr Abdul Aziz Al Safi Ismail

EVALUATION OF THE DIAGNOSTIC VALUE OF CARDIAC TROPONIN T IN THE DETECTION OF ACUTE MYOCARDIAL INFARCTION IN HUSM

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Introduction: Acute myocardial infarction (AMI) is a serious public health problem worldwide with increasing incidence of mortality every year. From being a disease predominantly seen in developed countries previously, myocardial infarction is now becoming more common in developing countries like Malaysia. According to the new definition of AMI, few criteria needed for the diagnosis of AMI including the cardiac biomarker, troponin. Cardiac troponins are highly specific and sensitive in detecting myocardial injury regardless of the cause is widely used especially in detecting AMI. Many studies have been conducted in the western population for the assessment of troponin T diagnostic value but none were done in Malaysian population. This study is to provide local data on the diagnostic value of troponin T for the diagnosis of AMI.

Objective: To assess the diagnostic value and best cut-off point of cardiac troponin T for the detection of acute myocardial infarction (STEMI & NSTEMI) in HUSM.

Methods: This was a retrospective study from January

2009 to March 2011. A total of 246 patients diagnosed with Acute Coronary Syndrome were selected based on the request of cardiac troponin T in the laboratory information system (LIS). Patients were further evaluated by examining their folders in the record office including the demographic data, onset of symptoms of chest pain or discomfort, risk factors, clinical examination, ECG, blood investigation; troponin T, provisional and final diagnosis. Troponin values of ≥ 0.03 ng/mL (Roche Elecsys) and ≥ 0.1 ng/mL (ROC AMI) were taken as the cut-off values for the diagnosis of AMI and for the assessment of cardiac troponin T diagnostic value. The best cutoff level for diagnosing AMI was determined by the ROC curve analysis.

Results: The sensitivity and specificity of cardiac troponin T varies with different cutoff value used. When a lower cutoff point of ≥ 0.03 ng/mL was used the sensitivity was high (94.17%) and the specificity was 87.30%. The positive predictive value (PPV) was 87.60% and the negative predictive value (NPV) was 94.02%. When higher cutoff value of ≥ 0.1 ng/mL was used the sensitivity observed to be markedly reduced to 76.67% but the specificity observed to be increased to 96.83%. The positive predictive value (PPV) was 95.83% and negative predictive value (NPV) of 81.33 % respectively. From analysis on the ROC curve, the optimal cutoff for the assessment of acute myocardial infarction by cardiac troponin T Elecsys third generation assay was identified as 0.037 ng/mL with area under curve of 0.9652. The diagnostic accuracy for acute myocardial infarction, as quantified by the AUC was significantly high. The sensitivity and specificity obtained from the ROC curve analysis is 90.0% and 90.5% respectively. This agrees well with the Roche Elecsys cutoff value of 0.03 ng/mL.

Conclusions: The sensitivity and specificity of troponin T in detecting acute myocardial infarction in HUSM patients were 90.0% and 90.5% respectively. The best cutoff point of troponin T in the diagnosis of acute myocardial infarction is ≥ 0.03 ng/mL. However, the interpretation of the troponin T value should be correlated with other clinical findings and not based on the rise of cardiac troponin T alone.

Supervisor:

Associate Professor Dr KNS Sirajudeen

Co-supervisor:

Dr Julia Omar

A STUDY OF MRSA BACTERAEMIA: THE ASSOCIATION BETWEEN RISK FACTORS AND VANCOMYCIN MIC LEVEL AS WELL AS THE TREATMENT OUTCOME

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Introduction: Methicillin-resistant *Staphylococcus*

aureus (MRSA) is a major cause of serious hospital and community acquired bacteraemia worldwide. It is associated with a high morbidity and mortality. Vancomycin is the treatment of choice for MRSA but vancomycin treatment failure in MRSA bacteraemia is not uncommon, even when MRSA is susceptible to vancomycin in-vitro. Vancomycin minimum inhibitory concentration (MIC) has been observed to have changed towards higher values. This raises the question on the association between vancomycin MIC level and treatment outcome. Furthermore, knowledge about relationship between the risk factors of MRSA with the treatment outcome and vancomycin MIC level can help clinician to manage MRSA bacteraemia more effectively.

Objective: The aims of this study were to determine the association of risk factors of MRSA and treatment outcome, the association of risk factors of MRSA and the vancomycin MIC level and the association between vancomycin MIC level and the treatment outcome.

Methods: This is a descriptive cross-sectional study done in Hospital Universiti Sains Malaysia (HUSM) and Hospital Raja Perempuan Zainab II (HRPZ II) on patient with significant MRSA bacteraemia from 1st January 2009 to 30th June 2011. Data for clinical significant, risks factors and the treatment outcome were reviewed from patients' case notes. All isolates from the blood of the patients were subjected to E-test vancomycin MIC test. Data analysis was done using SPSS software version 18.0.

Result: Fourty seven MRSA bacteraemia cases were included in this study. Diabetes mellitus requiring insulin therapy was significantly associated with treatment failure (95% CI = 11.176 and $P = 0.028$). There was no significant risk factor associated with vancomycin MIC level. High MIC level (≥ 1.5 µg/ml) was found to be significant for mortality within 30 days of onset of infection (95% CI = 10.062, $P = 0.039$).

Conclusion: This study shows that diabetes mellitus and requiring insulin therapy is associated with treatment failure. Higher level of vancomycin MIC even though within susceptible range has a significant association with 30-day mortality.

Supervisor:

Associate Professor Dr Habsah Hasan

Co-supervisor:

Dr Nurahan Maning

RISK FACTORS AND CLINICAL OUTCOME OF CARBAPENEM-RESISTANT *Acinetobacter baumannii* BLOOD STREAM INFECTION IN HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN

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Introduction: Carbapenem-resistant *Acinetobacter baumannii* blood stream infection (BSI) is an important cause of nosocomial infection in hospitals worldwide including in Hospital Universiti Sains Malaysia (HUSM). It is difficult to treat and is an infection control challenge. A case-control study was done to determine the risk factors and clinical outcome of *Acinetobacter baumannii* BSI in HUSM.

Objectives: To determine the risk factors of carbapenem-resistant *Acinetobacter baumannii* blood stream infection in HUSM. To determine the clinical outcome of carbapenem-resistant *Acinetobacter baumannii* blood stream infection in HUSM.

Methods: The risk factors and clinical outcome of *Acinetobacter baumannii* BSI in HUSM were determined by a 1:1 case-control study involving twenty confirmed cases of carbapenem-resistant *Acinetobacter baumannii* BSI patients compared to equal number of carbapenem-sensitive *Acinetobacter baumannii* BSI for a study period of one year (June 2009–May 2010).

Results: In multivariate analysis, the significant risk factors for carbapenem-resistant *Acinetobacter baumannii* BSI include exposure to carbapenem (OR: 9.132; 95% CI: 1.806, 46.171; *P* value: 0.007) and renal impairment (OR: 4.982; 95% CI: 1.020, 24.346; *P* value: 0.047). For clinical outcome, carbapenem-resistant *Acinetobacter baumannii* BSI (CRAB) has a significantly higher mortality compared to carbapenem-sensitive *Acinetobacter baumannii* BSI (CSAB) where crude mortality for CRAB was 75% (OR: 9.00; 95% CI: 2.151, 37.659; *P* value: 0.002) and attribute mortality was 58.3% (OR: 7.00; 95% CI: 1.293, 37.909; *P* value: 0.018).

Conclusions: This study shows the high mortality associated with carbapenem-resistant *Acinetobacter baumannii* BSI and reemphasizes the importance of limiting usage of broad spectrum antibiotics.

Supervisor:
Dr Zaidah Abdul Rahman

A PILOT STUDY ON HLA- DR/ DQ TYPING IN ADULT MALAY PATIENTS WITH ACUTE AMOEBIC LIVER ABSCESS

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Introduction: Amoebiasis is a parasitic disease caused by *Entamoeba histolytica* that causes death in developing country. Few important risk factors have been identified in the development of amoebic liver abscess (ALA). There are few reports that suggest an association between antigens of the major histocompatibility complex (MHC) particularly class II antigens and ALA development.

Objectives: The present work aimed at studying the

possible association of HLA antigens with ALA and disease severity. This may serve as a guide for further immunological study against infection dealing with *E. histolytica*.

Methods: This pilot study involved two groups of subjects with 20 ALA patients and 40 healthy controls. Cases were selected from adult Malay patients confirmed with ALA based on clinical signs and symptoms, radiological as well as microbiological findings, who were admitted to the medical or surgical ward, Hospital USM, Kelantan. Two millilitre of venous blood were obtained from each patient and HLA typing was then conducted by polymerase chain reaction-sequence specific primer according to manufacturer's instructions.

Results: HLA DR12 was most frequently found in healthy control and ALA groups with 40% and 55% respectively. HLA DQ7 and DQ8 were found to have the highest frequency in ALA group with 65% respectively while HLA DQ8 (57.5%) has highest frequency healthy group. In terms of severity, mild to moderate group has highest frequency of HLA DR12 (56.3%), HLA DQ7 (68.8%) and DQ8 (68.8%) while in severe group, HLA DR12 (50%), DR15 (50%) and DQ5 (75%) were most frequently found. However, there is no significant association found in between HLA DR/DQ antigens with healthy control group and ALA group and severity of the disease, possibly due to inadequate sample size.

Conclusion: HLA DQ7 and DQ8 were frequently found in ALA while DR15 and DQ5 were associated with severe presentation of ALA.

Supervisor:
Dr Zeehaida Mohamed
Co-supervisor:
Dr Nurul Khaiza Yahya

SERODIAGNOSIS OF TUBERCULOSIS INFECTION: AN EVALUATION OF SHORT PEPTIDES OF 16 KILODALTON *Mycobacterium tuberculosis* PROTEIN

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Introduction: Tuberculosis is the major public health problem worldwide. Poor detection especially in tuberculosis burden countries leads to poor tuberculosis control. Using bioinformatic tools, we have listed four *Mycobacterium tuberculosis* epitopes namely Rv2005c, Rv2031c, Rv3127, and Rv3130c that are expressed in human during active and latent phase. The short peptide namely 16 kilodalton A and B from one of its epitope which is Rv2031c of *Mycobacterium tuberculosis* protein were used in this study.

Objectives: The aims of this study were firstly to optimize the parameters for ELISA method for the detection of antibodies against short peptides of MTBA and MTB16B

of *M. tuberculosis* protein. Secondly to compare the humoral response of healthy and TB patients against short peptides of MTB16A and MTB16B *M. tuberculosis* protein and thirdly, to validate the sensitivity, specificity, positive predictive value and negative predictive value of the test.

Methods: A total of 92 blood samples were used in this study which consisted of 46 samples from healthy group and 46 samples from pulmonary tuberculosis patients. The enzyme-linked immunoassay method was used for evaluation of these two short peptides (16 kilodalton A and B). The serum titer of 1:50 for both healthy and tuberculosis patient were incubated before adding the secondary antibody at 1:2000 titer. The reactions were read at 410 nm wavelength. The cut-off of the positive antibody results in tuberculosis patients were taken at the mean optical density (OD) plus 2 times standard deviation of healthy serum samples.

Results: Among healthy patients, OD ranges from 0.27 to 1.75 for 16 kilodalton A and 0.31 to 1.55 for 16 kilodalton B while OD for tuberculosis patient ranges from 0.12 to 1.80, and 0.2 to 1.84 respectively. The sensitivity and specificity for 16 kilodalton A and B were 6.5%, 97.8% and 2.2%, 97.8% respectively. The positive predictive value and negative predictive value for 16 kilodalton A were 75%, 5.1% respectively. The positive and negative predictive value for 16 kilodalton B were both 50%.

Conclusion: These two peptides were not proven as a good candidate for the serodiagnostic markers. However, their immunogenicity reaction in healthy might be useful for vaccine development study.

Supervisor:

Dr Siti Suraiya Md. Noor

Co-supervisor:

Professor Norazmi Mohd Noor

A COMPARATIVE STUDY OF HAEMODYNAMIC EFFECTS BETWEEN TWO DIFFERENT DOSES OF OXYTOCIN IN LOWER SEGMENT CAESAREAN SECTION UNDER SPINAL ANAESTHESIA

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Introduction: There is always a discussion within the obstetric anaesthesia community about the correct dose of oxytocin and its method of administration. Oxytocin may cause adverse cardiovascular effects, including tachycardia and hypotension, whereas an inadequate dose can result in increased uterine bleeding.

Objectives: We compared the effects of two doses of oxytocin in a randomised double-blind trial.

Methods: Seventy patients undergoing elective lower segment caesarean section received an intravenous bolus

of either 10 unit or 2 unit of oxytocin after cord clamping, followed by oxytocin infusion 10 unit per hour. All patients received spinal anaesthesia, phenylephrine was used if the blood pressure fell more than 15% from the baseline. We compared changes in heart rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure, uterine tone, blood loss, additional usage of uterotonic drugs and emetic symptoms.

Results: There was a larger decrease in MAP in patients who received 10 unit, MD = -12.54 mmHg (15.1%), $P < 0.0001$ than in those who received 2 unit, MD = -5.46 mmHg (7.1%), $P = 0.023$. There was a greater increase in mean heart rate in patients who received 10 unit, MD = +9.20 bpm (10.2%), $P < 0.0001$ than in those who received 2 unit, MD = +8.23 bpm (9.5%), $P = 0.004$. Maximum increase in HR was at 2 minutes (+15.57 bpm, 17.28%). The frequency of antiemetic use was higher after 10 unit (27.6%) than 2 unit (2.9%), ($P = 0.042$). There was no difference in blood loss, uterine tone, or request for additional uterotonic drugs in both groups.

Conclusion: In elective lower segment caesarean under spinal anaesthesia with low risk for post-partum haemorrhage, a 2 unit bolus of oxytocin results in less haemodynamic changes than 10 unit, with less nausea and no difference in uterine tone, estimated blood loss and the need for additional uterotonics drugs.

Supervisor:

Dr Mohd. Nikman Ahmad

Co-supervisors:

Professor Dr Nik Abdullah Nik Mohamad

Dr Junaidi Khamis

COMPARISON OF IMMEDIATE RELEASE ORAL OXYCODONE HYDROCHLORIDE (KAPPA 2 RECEPTOR AGONIST) WITH ORAL PANTOPRAZOLE IN THE TREATMENT OF FUNCTIONAL DYSPESIA

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Introduction: Functional dyspepsia (FD) is the commonest cause of dyspeptic symptoms in the West and increasingly in other parts of the world, including Malaysia. The Rome III criteria defined FD as "presence of one or more of the following symptoms: epigastric pain and or epigastric burning sensation, bothersome postprandial fullness, early satiation with no evidence of structural disease (including at upper endoscopy). These symptoms are present in the last 3 months and symptoms onset at least six months prior to the diagnosis." However till now, the treatment of patients with FD remains unsatisfactory.

Objective: The aims of this study were to assessed the efficacy and safety of Immediate Release Oxycodone

Hydrochloride-Kappa 2 receptor agonist, in patients with FD over standard treatment with Proton Pump Inhibitor (PPI) using Pantoprazole.

Methods: Patients with FD in Hospital USM were randomly assigned to receive either Oral Oxycodone Hydrochloride 5 mg prn basis or Oral Pantoprazole 40 mg od. After eight weeks of treatment, three primary efficacy end points were analyzed: the change from baseline in the severity of symptoms of FD (as assessed by the Leeds Dyspepsia Questionnaire (LDQ), patients' global assessment of efficacy using Global Assessment Score (GAS) (the proportion of patients poor and good improvement), and the severity of pain and bloatedness as rated by LDQ severity scale. The safety of Oxycodone Hydrochloride assessed by the presence of significant side effect.

Results: We randomly assigned 60 patients for this study. After eight weeks, overall patients in Oxycodone Hydrochloride group had marked improvement of symptoms, as compared with patients receiving Pantoprazole daily. Analysis of patients' global assessment of efficacy (GAS) also revealed that Oxycodone Hydrochloride group was significantly superior to Pantoprazole with excellent proportion of good (26 vs 1) ($P < 0.001$). The total LDQ symptom score improved significantly in Oxycodone Hydrochloride groups (13.00 ± 3.29 vs 20.40 ± 3.07) ($P < 0.001$), with the greatest symptom-score improvement is less than 15 ($P < 0.05$). Epigastric pain and bloatedness improvement were greater in Oxycodone Hydrochloride than Pantoprazole; LDQ severity scale for epigastric pain (2.0 ± 1 vs 4.0 ± 1) ($P < 0.001$) and bloatedness (2.0 ± 1 vs 3.0 ± 1) ($P < 0.001$). The side effects of Oxycodone Hydrochloride was giddiness (13 vs 0) ($P < 0.001$). However when comparing it amongst the Oxycodone Hydrochloride group, it was statistically insignificant (13 vs 17) ($P = 0.465$).

Conclusion: Immediate Release Oxycodone Hydrochloride significantly improves symptoms in patients with FD with tolerable side effects.

Supervisor:
Dr Nizar Abd Jalil
Co-supervisor:
Dr Maya Mazuwin

THE EFFECTS OF ADMISSION TIME ON THE OUTCOME OF INTENSIVE CARE UNIT BETWEEN UNIVERSITY HOSPITAL AND MINISTRY OF HEALTH HOSPITAL

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Introduction: There are potential effects of admission time on weekends, night time and after office hour on the ICU

mortality and length of stay. The aim of this study is to see whether any significant differences occur between admission times and ICU mortality and length of stay.

Objectives: To compare the effect of various admission times on the ICU mortality and ICU length of stay in university hospital and ministry of health hospital.

Methods: Data of 684 adult patient whom were admitted between 1st January 2010 and 30th September 2010 to the intensive care unit (ICU) in HUSM and HRPZ II were reviewed. The baseline characteristics (age, sex, SOFA score, primary reason for ICU admission, and sources) and ICU outcomes (ICU mortality and ICU length of stay) of all patients are retrospectively collected.

Results: Our results showed that weekend, night time, after office hour admission to both ICU in university hospital and ministry of health hospital had no effect on the ICU mortality and ICU length of stay. There was no significant difference in comparing these two hospitals for the ICU mortality and ICU length of stay with regard to various admission time. The commonest reason of admission in HUSM was acute respiratory failure (30.7%) during weekend ($P = 0.001$), night time ($P = 0.035$) and after office hour ($P = 0.016$) admission.

Conclusion: We concluded that various admission time did not give an effects to the ICU mortality and ICU length of stay in both hospital.

Supervisor:
Dr Ahmad Nizam Alias
Co-supervisors:
Dr Wan Mohd Nazaruddin
Dr Wan Nasrudin Wan Ismail
Dr Mohd Nazri Ali

ETOMIDATE VERSUS KETAMINE FOR PROCEDURAL SEDATION IN PAEDIATRIC PATIENTS IN EMERGENCY DEPARTMENT

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Introduction: Procedural sedation and analgesia (PSA) which was previously known as conscious sedation was one of the commonly performed procedure in the emergency department (ED). Until today, no study had been done in comparing Etomidate with other sedative agents in Malaysian paediatric population. Even though Etomidate is "unpopular" sedative agent in paediatric procedural sedation, its pharmacodynamics which maintain cardiovascular stability are important in becoming an alternative to other sedative agents, especially in patients where ketamine are contraindicated due to severe hypertension or hypersensitive to the Ketamine.

Objective: The objectives of the study were to compare the sedation time (T1) between Etomidate versus Ketamine and the safety of both drugs in the procedural sedation and analgesia among paediatric patients in Emergency department.

Methods: A single blinded, randomized control study was conducted in Emergency Department Hospital Universiti Sains Malaysia, Kubang Kerian Kelantan, from 1st Jun 2010 until 31st May 2011. 29 paediatric patients aged from 2 years old until 12 years old were recruited with the permission of their parents. They were randomized to two group, Etomidate group which received IV Fentanyl 1 µg/kg plus IV Etomidate 0.2 mg/kg and Ketamine group which received IV ketamine 1.5 mg/kg. 13 patients randomized to Etomidate group and 16 patients to Ketamine group. Sedation time (T1) was measured from the start of administering the sedation drug until patients achieved adequate sedation which is characterized by Ramsay sedation score of 4. Vital sign was monitored and any adverse events documented until patients safely discharged/ admitted.

Results: From 29 subjects, only 23 subjects able to achieved adequate sedation level with the study drugs. All subjects who did not achieved adequate sedation level were from Etomidate group. From those 23 subjects, median T1 for Etomidate group was 5 minutes (IQR 9.0). In the Ketamine group, the median T1 was 1.5 minutes (IQR 4.0). There was no statistical difference in the T1 between the Etomidate group and Ketamine group (P value = 0.17). In this study, the adverse event that has been documented was retching and vomiting and the incidence between the two groups of study drug was similar and no significant difference. (P value = 0.53). There was no serious adverse effect documented during this study.

Conclusion: This study proved that sedation time between Etomidate and Ketamine for the PSA were not significantly differ and Etomidate was less effective for PSA compared to the Ketamine in the paediatric age group. Nevertheless, both groups of sedative agents were relatively safe to be used without any serious adverse effect in the paediatric population in Malaysia.

Supervisor:

Dr Abu Yazid Bin Md Noh

Co-supervisor:

Associate Professor Dr Nik Hisamuddin Bin Nik Abdul Rahman

OUTCOME OF SEVERE HEAD INJURY IN SCHOOL AGE PATIENTS AT EMERGENCY DEPARTMENT OF HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Despite much progress in care and resuscitation of injured patients, it is difficult to make exact prognosis prediction of those with brain injury. By evaluating prognostic factors to define the severity of brain damage it is possible to check our treatment strategies and to develop better ones to improve the efficiency of treatment or to compare our patients with those from other hospitals. It is also possible to give the relatives a more realistic prognosis of long term results and to make early decisions about rehabilitation. Factors that may affect the outcome are (age, the co-morbidity of the patient, and the post trauma care in the hospital or at home). School age group are the aspect of my study because of the difference in the psychological and physiological characteristics, and because of that the trauma will have different affect and out come from the adult group. (Aldrich *et al.*, 1992).

The developing brain of the children is reacting differently from the already developed adult brain. Functionally the child yet to learn a lot of skills and save them in this developing brain, in the contrary the adult brain already gained these skills and saved it in a particular part of that brain. Head injuries are among the most common types of trauma seen in emergency departments (EDs). Majority of trauma patients die at scene before reaching hospital. (Gofrit *et al.*, 1997)

Objectives: The aim of this study is to determine the survival probability of school aged patient with severe head injury treated in Emergency department of HUSM, to determine the mean length of stay (days) of school aged patient with severe head injury treated in Emergency department of HUSM, to determine the prognostic factors that influence the risk of death among school aged patient with severe head injury treated in Emergency department of HUSM and to determine the associated factors that affect the length of hospital stay among school aged patient with severe head injury treated in Emergency department of HUSM.

Methods: It is a Retrospective Cohort study with data collected from records during the years 2007–2009 of all (total sample 91) school aged patients with severe head injury presented to emergency department of hospital USM (EDHUSM) and went under surgery or directly admitted to ICU followed for 30 days.

Results: The mean age was 15. More than 50% of the cases came with initial GCS 6 and above, 67 patients (73.6%) were alive at the end of 30-days. From this study we found that survival probability for severely head injured school aged children was 73.6%. The mean length of stay (days) in hospital was 17 days.

Conclusion: Age, CT Finding and GCS of patient at admission were identified as factors related to mortality outcome and to total length of stay in hospital.

Supervisor:

Associated Professor Dr Nik Hisamuddin Nik Abdul Rahman

IS TYPE OF INJURY ON PRESENTATION AT THE EMERGENCY DEPARTMENT OF A TRAUMATIC MOTORCYCLIST PREDICTING MORTALITY WITHIN 30 DAYS?

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Introduction: Road traffic accidents are a major issue worldwide and motorcycle is the least safe in term of production to protect its occupant from multiple injuries particularly extremities fracture, head and cervical injury and abdominal injury. An occupant of motorcycle is subjected to 4 forces, first the motorcycle hit an object (vehicle impact), then the rider hit object (body impact) and the mobile organ hit a solid structure and lastly secondary impact from pillion or other vehicle. This paper discusses whether type of injury is a predictor of trauma death in motorcyclist.

Methods: The research had enrolled 234 patient who had consented, after had a trauma as an occupant of motorcycle either rider or pillion who had visited emergency department Hospital Universiti Sains Malaysia from June 2010 till January 2011 who fulfilled the inclusion and exclusion criteria and their information are recorded in a form. The type of injury in the motorcyclist at emergency department predict the survival of the patient within 30 days using Kaplan Maier and Cox Proportional Hazard Model Statistical package for Social Science (SPSS) software version 18.0 dated 30th July 2009.

Result: The cases are mainly male 81.5%, majorly from the age group of 16 to 25 years of age, and majorly are diagnosed soft tissue injury with fracture extremities. The mean of survival for the mortality group is 28 days. Type of injury does not predict the mortality. However factor significant enough to predict mortality is revised trauma score with increasing score improves survivability. The hospital length of stay median is 6 days and interquartile range was 9 days. The predicting factor for admission is based on the type of injury.

Conclusion: In this research, the independent factor to predict mortality is revised trauma score, the paper failed to show that type of injury is predictor of mortality within 30 days, and type of injury predict the length of hospital stay.

Supervisor:
Associate Professor Dr Nik Hisamuddin Nik Abdul Rahman
Co-supervisor:
Dr Aniza Ab Aziz

A PROSPECTIVE STUDY ON THE EFFECTS OF DIFFERENT METHADONE DOSAGES ON QTc INTERVAL AMONG OPIATE DEPENDENT INDIVIDUALS RECEIVING METHADONE MAINTENANCE THERAPY (MMT)

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Introduction: Methadone is an effective treatment for opioid dependence and chronic pain. However, recent evidence suggests it also prolongs the QTc interval, resulting in torsade de pointes (TdP), a prerequisite to fatal cardiac arrhythmia, ventricular fibrillation (VF). Although higher doses of methadone are clearly more efficacious in reducing illicit opioid abuse, arrhythmia risk appears to increase in parallel creating an efficacy-safety paradox. This study investigates the effects of different methadone dosages on the QTc interval in opioid dependent individuals undergoing MMT over an eight week period.

Methods: A prospective cohort study for six months duration was done from June until December 2010 on eligible subjects undergoing Methadone Maintenance Therapy (MMT) in HUSM. The QTc intervals were measured at the beginning of the study (week 0) and measured again during follow up at week 4 and week 8 of study period. Serum potassium, calcium and magnesium along with serum methadone levels were also measured at each visit. The association between prolonged QTc interval and different methadone dose groups as well as other parameters was analyzed using SPSS version 18.0.

Results: There were 46 patients enrolled into the study during the study period. No patient had a QTc interval of more than 500 ms during the study period. There were no statistically significant correlation between QTc interval and both clinical dose and plasma methadone level ($r = 0.22$, $P = 0.148$ and $r = 0.08$, $P = 0.617$ respectively). There was a marginally significant association between prolonged QTc interval and methadone dose group at week 0 ($P = 0.044$, OR 4.29 (0.98,18.72). In week 4, there was a significant association between prolonged QTc interval and methadone dose [$P = 0.013$, OR 5.18 (1.34,20.06)]. However, the QTc interval prolongation was not associated with different methadone dose in week 8 [$P = 0.139$, OR 2.44 (0.74,8.01)]. Further analysis with RM ANOVA revealed a significant increase of QTc interval over time ($P = 0.005$).

Conclusion: We concluded that opiate dependent individuals who received MMT showed a progressive QTc interval prolongation over the course of methadone treatment. Subjects who were receiving methadone dose of greater than 80 mg per day are more likely to develop prolonged QTc interval compared to subjects receiving less than 80 mg of methadone daily. However, the effects of the different methadone dosages

on QTc interval were not consistent throughout the study period, suggesting the complex and fluctuating nature of methadone induced QTc interval prolongation even when the dose remained constant.

Supervisor:
Dr Nasir Mohamad

A RANDOMIZED CONTROLLED TRIAL ON THE USE OF BUDESONIDE/FORMOTEROL (SYMBICORT®) AS AN ALTERNATIVE RELIEVER MEDICATION FOR MILD TO MODERATE ASTHMATIC ATTACK IN ADULT PATIENTS IN EMERGENCY DEPARTMENT, HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Asthma is a serious global health problem throughout the world that if uncontrolled, can result in severe daily life limitations and may sometimes be even fatal. The goal of treatment of acute asthma is to reverse the airflow obstruction, ensure adequate oxygenation and to relieve the inflammation. Beta2-agonist like Salbutamol has been commonly used as a conventional reliever (bronchodilator) treatment for patients with acute exacerbations of asthma, whereas inhaled corticosteroids are needed for their anti-inflammatory effects as asthma is a type I hypersensitivity reaction.

Objectives: The purpose of this study is to evaluate the effectiveness of Symbicort turbuhaler which is a combined long acting beta2-agonist and steroid as an alternative reliever in mild to moderate acute exacerbation of bronchial asthma and subsequently, to evaluate patient's acceptance regarding initiating SMART approach (Symbicort Maintenance and Reliever Therapy).

Methods: A randomized controlled trial was done from March until August 2011 between nebulizer Salbutamol and Symbicort turbuhaler in adult patients with mild to moderate acute exacerbation of bronchial asthma who presented to Emergency Department HUSM. Patients who fulfilled the criteria and agreed to participate in this study were randomly assigned either nebulizer Salbutamol or Symbicort turbuhaler as the treatment. Objective parameters such as respiratory rate (RR), oxygen saturation (SPO2) and peak expiratory flow rate (PEFR) and, subjective parameters such as visual analog scale (VAS) and 5-point Likert Scale of breathlessness were recorded before and after treatment.

Results: After randomization, 17 patients were chosen to receive nebulized salbutamol and another 15 patients received symbicort turbuhaler. There were significant improvements in respiratory rate (RR), oxygen saturation

(SPO2) and PEFR in patients received symbicort turbuhaler ($P = 0.001$, $P = 0.027$ and $P < 0.001$ respectively). This result is as significant as patients received nebulized salbutamol. When comparing the means difference between these two groups, it showed that there were no significant difference in terms of changes in respiratory rate, SPO2 and PEFR ($P = 0.687$, $P = 0.350$ and $P = 0.507$ respectively). In terms of subjective parameters using 'Visual Analog Score' and '5-point Likert Scale of breathlessness', it also showed that there were no significant difference in patients who received symbicort turbuhaler or nebulized salbutamol ($P = 0.765$ and $P = 0.688$ respectively). We also found that SMART therapy were well accepted by most of the patients based on questionnaires answered.

Conclusion: This study showed that symbicort turbuhaler can be used as an alternative treatment for patients with mild to moderate exacerbation of asthma as there were no significant difference improvements in objective parameters and in subjective parameters compared to nebulized salbutamol.

Supervisor:
Dr Chew Keng Sheng

THE WEEKEND EFFECT ON MORTALITY OUTCOME OF PNEUMONIA PATIENTS IN EMERGENCY DEPARTMENT, HUSM

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Introduction: Emergency Department of Hospital Universiti Sains Malaysia is considered as the heart of all hospital areas, because it must keep pumping for 24 hours per day and 7 days per week for the rest of the year. It was suspected that holidays and weekend were dangerous times to get sick. Because the staffing levels, access to diagnostics, seniority and experience were lower compared to weekday and this may lead to shortfalls in care.

Objectives: Previous studies have suggested that patients admitted to hospital on a weekend were more likely to die than those admitted at weekday. It is unclear if inpatient mortality rates within 30 days, readmission within 6 months and length of hospital stay for adult community acquired pneumonia that treated and admitted through our ED are increased for weekend compared to those on a weekday.

Methods: This is a retrospective cohort study of a one year period from 1 January 2009 and 31 December 2009. This study was conducted at the Emergency Department Hospital Universiti Sains Malaysia (HUSM), Kubang Kerian, Kelantan. The eligible population were the source population fulfilled the inclusion and exclusion criteria. A total of 478 of community acquired pneumonia cases seen and admitted through the

Emergency Department Hospital Universiti Sains Malaysia during the study period.

Results: The weekend admissions comprised 182 (38.1%) admissions (478 hospital admissions). Majority of those admitted were female patients, 277 (57.9%) and Malay in gender 464 (97.1%). Mean age on admission was 58.14 years (SD 15.8), the youngest patient in this study was 18 year and the oldest one was 94 years old. The mean length of hospital stay was 6.4 days (SD 3.7). Weekend admission was associated with high length of hospital stay with mean 6.69 days (SD 4.46). After compared with admission day, weekend was not correlated with increased length of hospital stay (P value = 0.21, 95% CI -1.21, 0.27). The overall hospital mortality rate was 18.4% (88 deaths), with weekend death 34 (7.1%). Weekend admission was not associated with a higher hospital mortality rate for CAP patients than weekday admission (χ^2 Value 4.82, df 2, P = 0.09). For patients discharge from hospital, 94 of these patients were readmitted for CAP within six months and minority of readmission was in a weekend 24 patients (5%). The readmission rate at 6 months were not significantly different for patients previously admitted at a weekend as compared with previous weekday admission (χ^2 Value = 2.42, df= 2, P = 0.29).

Conclusion: On analyzing 478 patients with community acquired pneumonia admitted through our emergency department in year 2009, there was no significant different of in-hospital mortality rate within 30 days in patients admitted at the weekend compared to the weekday. We also found no statistically significant in hospital length of stay and rate of readmission over 6 months for weekend admission.

Supervisor:
Dr Abu Yazid Md Noh

OCCUPATIONAL INJURY: ITS ASSOCIATED FACTORS AND OUTCOMES IN THE EMERGENCY DEPARTMENT HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Occupational injury is a common presentation to the Emergency Department. Most of the time, its injury is related to multiple socio-demographic background, nature of occupation, type of industries, gender and education level. By determining the factors that contribute to the cause of such injury, the incidence of occupational injuries can be prevented and reduced.

Objectives: The aims of this study were to describe the socio-demographic predictors and occupational

characteristics, to determine the nature and outcomes of occupational injuries and to determine the socio-demographic and occupational characteristics of occupational injury outcomes in terms of physical disability and compensation status of patients presented with occupational injury at Emergency Department HUSM.

Methods: This was a retrospective study within timeframe of January 2007 till January 2009. The occupational injury patients' medical records were traced from HUSM Record Unit. Socio-demographic predictors and occupational characteristics were recorded. Patients' outcome in terms of physical disability and compensation status one year post-injury were followed-up by interview via telephone or home visit.

Results: Sociodemographic predictors revealed that the majority of patients were single Malay male workers with min age 31 years old and non tertiary education holder. In terms of occupational characteristics, the majority of the patients were middle class earner who worked in construction industry for less than ten years. In terms of the nature of occupational injuries, it is noted that most of the injuries occurred at workplace, during morning shift, caused by machinery, resulting in amputations and involving upper limbs. As for the occupational injury outcomes, most of the patients suffered temporary physical disability and had received compensation. Female gender was noted to have significant association (CI; 0.01, 0.96, P = 0.047) with physical disability, whereby female workers had a protective risk for having physical disability post occupational injury as compared to male workers.

Conclusion: We conclude that female gender was associated with more protective risk for physical disability following occupational injury (P = 0.047). Other factors seemed to be poorly predicted the physical disability risk and compensation status of occupational injury.

Supervisor:
Dr Emil Fazliq Mohd
Co-supervisor:
Dr Aziah Daud

DEVELOPING AND VALIDATING RESUSCITATION QUESTIONNAIRE (RESQ) AMONG SCHOOL CHILDREN IN MELAKA

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Introduction: Coronary disease is the most common cause of death worldwide. As in Malaysia, cardiovascular disease remains an important cause of death accounting for 20-25% of all death in government hospital from 2000-2005 (CPG of AMI 2007). Cardiac arrest is one of the most emergencies sequelae following cardiovascular event with

grave consequences but the high mortality associated with them can be prevented. This study was carried out with intention to create and evaluate the validity and reliability of research knowledge and attitudes of secondary school students towards resuscitation.

Objectives: To develop and validate Resuscitation Questionnaire (RESQ) - a questionnaire on knowledge and attitudes towards heart attack, CPR and resuscitation.

Methods: This study uses a traditional paper and pencils distributed to the students involved and they answered the questions on the same question paper. This study was conducted sometime in June 2010 until June 2011. The questionnaire was created and structured by the Emergency Physician based on literature review available. The methods used to validate resuscitation questionnaire (RESQ) included translational validity, construct validity, and reliability test.

Results: Random sample of 216 students from two schools from Form 3 in Melaka Tengah has been undergoing the test. 52 people again, from two different schools in the district have undergone the test twice in the interval of 10 days to assess the reliability of the question. The majority of participants were the Malays of 64.4%. A total of nineteen items from the knowledge of heart attack has been removed due to the low correlation. Factor loading using principal components (PCA) and varimax rotation is between the 0.410 to 0.871. Cronbach's alpha were used in assessing internal consistency RESQ ranging from 0.435 to 0.871. Intraclass correlation coefficient (ICC) was used to assess the reliability of the "test-retest" RESQ and the result is very good. The process of validation and reliability are acceptable in developing RESQ.

Conclusion: From this validation study, RESQ can be used for intervention studies in the near future to evaluate the effectiveness of resuscitation carried out on secondary school students. This is necessary to raise awareness about the importance of CPR programs to the community as a preparation for life-saving situations using the correct techniques before medical help arrives.

Supervisor:

Professor Dr Kamaruddin Jaalam

Co-supervisors:

Associate Professor Dr Nik Hisammuddin Nik Abdul Rahman

Dr Kamarul Imran Musa

ULTRASONOGRAPHIC INFERIOR VENA CAVA/ ABDOMINAL AORTA DIAMETER INDEX, A NEW APPROACH OF ASSESSING HYPOVOLEMIC SHOCK CLASS 1

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Introduction: Hypovolemic shock is the major cause of mortality following trauma. The ability of Emergency Department personnel to recognise hypovolemia in its early phase will expedite management and reduce the mortality rate. We design this study to expand the usage of ultrasound to detect early occurrence of hypovolemia. We explore the potential use of inferior vena cava and aorta diameter index measured ultrasonographically to detect hypovolemic shock in class 1 with blood loss less than 15%.

Objectives: The aim of this study is to determine the changes in the diameter of inferior vena cava and abdominal aorta in blood donors using ultrasound by measuring the aorta and IVC diameter, pre and post blood donation. The result of the study will be further explored to determine the inferior vena cava – abdominal aorta diameter index pre and post blood donation, and subsequently to explore potential of using the new method in assessing class 1 hypovolemic shock.

Methods: This is a prospective study done in the Blood Bank of Hospital Universiti of Science Malaysia. Researcher was trained by a senior radiologist to assess inferior vena cava and abdominal aorta diameter. The study was conducted in the blood bank with the assistance of paramedics. Fifty two healthy blood donors were included in the study. Inclusion criteria are same with the blood bank criteria to donate blood. Demographic data and vital signs were taken before the ultrasound measurement done for inferior vena cava and abdominal aorta diameter. Once the volunteers donated their blood of approximately 450 mls; the measurement were repeated using the same methods.

Result: The data obtained were analysed with SPSS software. There were significant changes of inferior vena cava and abdominal aorta diameter pre and post donation. There were also differences of inferior vena cava: aorta diameter index pre and post donation. With mathematical analysis, we suggest the number of IVC: Aorta index as $1.14 \pm 2SD$ with SD 0.18 as a cut off number for hypovolemia.

Conclusion : The IVC: Aorta diameter index can be used as a parameter of detecting early phase of hypovolemic shock.

Supervisor:

Associate Professor Dr Rashidee Ahmad

Co-supervisors:

Associate Professor Dr Meera Mohaideen Hj Abd Kareem

Dr Shaik Fareed Abdul Wahab

A COMPARATIVE STUDY ON THE FEASIBILITY AND ACCURACY OF LUNG ULTRASOUND AND CHEST RADIOGRAPHY IN EARLY DETECTION OF ACUTE PULMONARY OEDEMA

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Introduction: The standard investigation approach to acute pulmonary edema (APO) usually includes obtaining initial chest x-ray (CXR). Unfortunately, CXR has its own limitations. Recently, lung ultrasound (LUS) had been established to determine lung congestion in APO patient. The main application of LUS for the emergency physician in patient with APO and HF is the assessment of B-lines, the present of multiple B-lines suggestive of APO.

Objective: To determine the sensitivity, specificity, positive and negative predictive value of ultrasound lung comets (ULC) and chest radiographic (CXR) as a sign for predicting dyspnea of cardiac origin in patient with acute pulmonary oedema (APO) who attended emergency department (ED).

Methods: Out of 122 patients who fulfilled the Framingham criteria of heart failure, only 35 patients had acute pulmonary oedema (APO) based on clinical assessment during the enrollment period from December 2009 until Jun 2011. The APO patient undergo for lung ultrasound (LUS) to determine the ULC as a predictor of pulmonary congestion. The LUS was carried out during the initial assessment in ED. The portable CXR was performed after the LUS examination. Performance time of bedside LUS and CXR were recorded.

Results: Study showed that the ULC has a sensitivity of 100% and a specificity of 97.7%. The positive predictive value was 94.6% and the negative predictive value was 100%. The accuracy of LUS was 98.4%. There was significant mean difference of performance time between the LUS and CXR ($P < 0.001$). We found that the performance time of bedside LUS was faster than performing a CXR.

Conclusion: Bedside LUS can be used to diagnose pulmonary congestion in APO patient in the presence of ULC. The future development and training of emergency physicians in this technique are useful in the ED setting.

A COMPARATIVE STUDY ON ADVERSE DRUG REACTIONS (ADRs) OF METHADONE AT DIFFERENT DOSAGES IN METHADONE MAINTENANCE THERAPY (MMT) INDIVIDUALS

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Introduction: To ascertain optimal dosing for methadone maintenance therapy in clinical settings is very challenging. Higher doses (> 80 mg) had been postulated to have serious adverse drug reactions (ADR) while low dose encourage defaulter and illicit drug seeking behaviour. It has been observed that physicians are too afraid to maximize methadone dosage to a required level mainly due to misconception about its side effects. This study hopes to clarify this misconception and encourage physician to optimize

personalized methadone dosing.

Methods: A comparative cross sectional study was done from December 2010 until August 2011 on eligible methadone maintained subjects in HUSM psychiatric clinic and local methadone clinic. A validated questionnaire was used to assess the side effects and dosing regimen. Data will be discarded if initial sampling shows QTc > 450 ms in male and 470 ms in females, electrolyte imbalances on routine blood screening, positive urine drug test or taking any illicit drug listed.

Results: There were 49 patients enrolled into the study during the study period. There were a positive and fair correlation between methadone dose and plasma level (Pearson $R = 0.36$, Regression coefficient, $R^2 = 0.285$, parameter vector $b = 2.685$, $P = 0.025$).

Potential life-threatening QTc prolongation was more frequent in higher methadone dose (> 80 mg) groups ($P = 0.025$ (CI 1.73, 24.60). However, other potentially life-threatening symptoms such as respiratory depression, breathlessness, shallow breathing and palpitation were not statistically significant between the two methadone dose groups. ($P = 0.083$, $P = 0.133$, $P = 0.052$, $P = 0.062$ respectively).

Other statistically significant symptoms such as constipation, stomach upset, problems with erection or ejaculation, headache or lightheadedness, chronic fatigue and drowsiness or sleepiness were not life-threatening and tolerable to most subjects. ($P = 0.001$, $P = 0.003$, $P = 0.005$, $P = 0.017$, $P = 0.021$, $P = 0.029$ respectively).

Withdrawal or mixed symptoms such as itchiness, sweating, flushing and insomnia were the most common symptoms occurrence and more frequent in lower dose methadone groups ($P = 0.001$, $P = 0.005$, $P = 0.019$, $P = 0.033$ respectively).

Conclusion: We concluded that physician can prescribed high dose methadone (> 80 mg) provided there is a regular monitoring or screening of its life-threatening adverse drug reactions such as prolonged QTc interval and respiratory depression.

Supervisor:
Dr Nasir Mohamad

A RANDOMIZED CONTROLLED TRIAL STUDY COMPARING FOCAL BRAIN COOLING AND STANDARD THERAPY IN SEVERELY HEAD INJURED PATIENTS WITH GCS 6-7: AN INTERIM REPORT

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Introduction: Induced hypothermia for treatment of traumatic brain injury is controversial. Since many pathways

involved in the pathophysiology of secondary brain injury are mostly temperature dependent, direct regional brain hypothermia is thought as capable to mitigate those processes.

Objectives: To assess the therapeutic effects of direct regional brain cooling in severe head injury with initial GCS of 6 or 7 and the possible complications that might arise from the therapy.

Methods: A prospective randomized controlled study involving patients with severe traumatic brain injury with GCS 6 or 7 who require decompressive craniectomy. Patients were randomized into three groups: mild cooling (30–36 °C; 10 patients); deep cooling (20–29 °C; 9 patients) and no cooling (13 patients). Brain was cooled by irrigating the brain continuously with cold Hartmann solution for 24–48 hours. Outcome assessments were a dichotomised GOS at discharge and at 6 months post-trauma.

Results: A total of 32 patients were recruited. Both, deep- and mild-cooling-treated patients did better than no cooling group ($P = 0.007$). Interestingly, mild-cooling-treated patients did apparently better than deep- or no-cooling-treated patients at 6 months post-trauma. Optimal cerebral perfusion pressure (60–75 mmHg) and near normal focal brain oxygenation (35–48 mmHg) were noted in mild-cooling-treated patients; and all cooling-treated patients, the suppression in immunological parameters were not observed.

Conclusion: Direct regional brain hypothermia is beneficial in severely head injured patients with initial GCS of 6 or 7. Besides, the method was proven safe and feasible.

Supervisor:

Associate Professor Zamzuri Idris

Co-supervisors:

Dr Wan Zuraida W.A. Hamid

Dr Kamarul Imran

CSF NITRIC OXIDE LEVELS AND THE EXPRESSION OF ISOFORMS OF NITRIC OXIDE SYNTHASE AS AN INDICATOR OF SEVERITY & PROGNOSIS IN PATIENTS WITH SEVERE TRAUMATIC BRAIN INJURY

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Introduction: Nitric oxide (NO) is a cell membrane-permeable free radical gas which can be produced by nearly all tissues in the body. It is the smallest known biologically active molecule with a diverse list of functions involving most major systems of the human body. Nitric oxide produced by the inducible form of the enzyme nitric oxide synthase (iNOS) has a definitive role in the complex pathophysiology of TBI.

Objectives: To study the changes in nitric oxide metabolite (NOx) levels in CSF and associate them with factors

that indicate severity and prognosis after severe TBI. This study also aimed to study the expression of iNOS in brains of patients with TBI.

Methods: A prospective cohort study was conducted in HUSM, Kubang Kerian over six months from June 2010 to January 2011 to study the levels of nitric oxide metabolites (NOx) in the CSF obtained via ventriculostomy in patients admitted after severe TBI (GCS $\leq 8/15$). Specimens of contused brain were also obtained from patient who underwent excision of their contusions as a part of the therapeutic measures. Mean levels of CSF NOx were compared with indicators of severity and prognosis in TBI including Glasgow Coma Scale score on admission, Pupil status, ICP Reading, CT scan findings according to the Marshall Grading System and Glasgow Outcome Scale.

Results: The mean level of CSF NOx in our series was 7.40 ± 1.59 $\mu\text{mol/L}$. Mean levels of CSF NOx were found to be significantly higher in patients with poor outcome measured by GOS score ($P < 0.042$). The mean CSF NOx levels were also higher in those patients with high ICP readings ($P < 0.027$) as well as in those with higher grades of CT findings according to the Marshall CT Grading ($P < 0.026$). Simple logistic regression demonstrated that CSF NOx levels are significant predictor of ICP ($b = 0.493$, 95% CI: 1.03, 2.58, $P = 0.033$). A patient with 1 $\mu\text{mol/L}$ increase in NOx level has a 1.6 times the odds to have ICP ≥ 20 mmHg when other confounders were not adjusted. NOx level is also a significant predictor of Marshall CT Grading ($b = 0.473$, 95% CI: 1.02, 2.50, $P = 0.037$). A patient with 1 $\mu\text{mol/L}$ increase in NOx level has a 1.6 times the odds to have a high Marshall Grade when other confounders were not adjusted. NOx levels however were not significantly associated with outcome. Immunohistochemical expression of the enzyme iNOS was seen to be significant in neurons and neutrophils in specimens of contused brain taken from 10 patients within the study population.

Conclusion: From this study we can conclude that CSF NOx levels may serve as a potentially useful biomarker in TBI given its significant association with ICP readings as well as Marshall CT Grading in patients with severe TBI.

Supervisor:

Assoc Professor Hillol Kanti Pal

Co-supervisors:

Associate Professor Mummedy Swamy

Associate Professor Hasnan Jaafar

A PILOT STUDY ON SENSITIVITY AND SPECIFICITY OF CYSTATIN C IN DETECTING RENAL IMPAIRMENT IN HYPERTENSIVE PREGNANCIES

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Introduction: Kidney is an important organ in maintaining physiology of pregnancy. Pregnancy related acute renal failure predisposes the pregnancy to multiple medical risks, thus increased morbidity and mortality. Early detection of renal impairment in hypertensive pregnancies enable immediate referral and multidisciplinary approach. Consequently further deterioration of kidney function is preventable. Diagnostic tools with high sensitivity and acceptable specificity is important for renal function assessment.

Objectives: This study is to compare between Cystatin C and 24 hours urine creatinine clearance for detection of renal impairment in hypertensive pregnancies population.

Methods: 64 patients enrolled in this cross sectional study and each patient was required to collect 24 hour urine and 15 mL of blood. Blood taking was taken once in second and third trimester. Urine collection was carried out during the first visit. Creatinine clearance below 90 mL/min is taken as renal impairment and compared to the serum Cystatin C level. The Receiver Operating Characteristic Curve is drawn to obtain the sensitivity and specificity of Cystatin C.

Results: The results have shown that when compared to 24 hour urine creatinine clearance, in second trimester, Cystatin C is 84.6 % sensitive and 86.7% specific for detection of renal impairment at Cystatin C level of 0.574–0.898 (P value < 0.012), area under curve: 0.736, positive predictive value is 0.92 and negative predictive value is 0.76. While in the third trimester, the sensitivity and specificity is 76.9% and 60% at the Cystatin C level of 0.657–1.00 (P value < 0.006), area under curve 0.838, the positive predictive value is 0.71 and negative predictive value is 0.67.

Conclusion: Our study suggests that Cystatin C is a useful diagnostic kit for diagnosis of renal impairment in hypertensive pregnancies population.

Supervisor:

Associate Professor Dr Nor Aliza Bt Abdul Ghaffar

Co-supervisors:

Dr Julia Bt Omar

Professor Dr Syed Hatim Noor

PREDICTIVE FACTORS OF ABNORMAL GLUCOSE TOLERANCE AT SIX WEEKS POST-PARTUM IN WOMEN WITH GESTATIONAL DIABETES, IN HUSM KELANTAN

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Introduction: The World Health Organization (WHO) has estimated that in 2030, Malaysia would have a total number of three million diabetics compare to 0.94 million in 2000. In concordance with this, the prevalence of Gestational

Diabetes Mellitus is increasing as well. Gestational Diabetes Mellitus (GDM) is defined as any abnormal carbohydrate intolerance that begins or is first recognized during pregnancy. Therefore, this study was conducted in order to determine the prevalence and predictive factors of abnormal glucose tolerance at six weeks post-partum in women with gestational diabetes in HUSM, Kelantan.

Objectives: General objective was to evaluate the prevalence and predictive factors of abnormal glucose tolerance at six weeks post partum in women with gestational diabetes, in HUSM Kelantan.

Methods: A prospective cohort study was conducted on 101 pregnant women with Gestational Diabetes Mellitus who attended antenatal clinic, Hospital University Sains Malaysia (HUSM). The study was conducted after obtaining approval from the University Sains Malaysia Ethical Committee and consent from participants. During first visit, demographic data, associated history and status of GDM were obtained from patient and antenatal cards. Blood for glycosylated hemoglobin (HbA1c) that was taken earlier was reviewed. They were counseled on pregnancy and post-partum management of diabetes during visit at antenatal and post-natal period. Following appropriate counseling, an appointment at six weeks post-partum at post-natal clinic, HUSM was given. At the visit at six weeks post-partum, subjects underwent an Oral Glucose Tolerance Test (OGTT) and result was analyzed. The univariate analysis to study the association among predictive factors and abnormal glucose tolerance at six weeks post-partum were calculated using Simple Logistic Regression analysis. Following this, Multivariate Logistic Regression analyses was done using binary logistic and enter stepwise method with 95% confidence interval was performed to assess significance, predictive factors and outcome after considering the potential variables.

Results: The prevalence of abnormal glucose tolerance test at six weeks post-partum was 39.6% including 35.64% of IGT and 3.96% of DM. None fulfill the criteria for IFG. Working status as a teacher was the only pre-pregnancy factor that significantly associated with abnormal glucose tolerance at six weeks post-partum ($P = 0.001$). Other pre-pregnancy factors that were studied; age, race, parity, educational level and pre pregnancy BMI were not statistically significant. Pregnancy-related risk factors; HbA1c at diagnosis of GDM ($P = 0.038$), insulin therapy ($P = 0.004$), previous history of GDM ($P = 0.009$), and gestational age at the time of GDM diagnosis ($P = 0.026$) were significantly associated with the persistence of glucose intolerance after delivery. However there was no association demonstrated with other pregnancy related factors; FBS 0 min during pregnancy, OGTT 120 minutes, diet therapy and gestational age at start of insulin therapy.

Conclusion: The prevalence of post-partum abnormal glucose tolerance in women with GDM at HUSM, Kelantan was 39.6% and was significantly associated with working status as a teacher, HbA1c at diagnosis of GDM, insulin therapy, previous history of GDM, and gestational age at the time of GDM diagnosis. The diagnosis of GDM should initiate a

lifelong monitoring of glucose tolerance to minimize the risk of developing diabetes, and to prevent the possible complications that might arise from diabetes.

Supervisor:

Dr Nik Zuky Nik Lah

Co-supervisors:

Dr Che Anuar Che Yaakob

Dr Mohd Pazudin Ismail

PRE-OPERATIVE EVALUATION OF DOPPLER ULTRASONOGRAPHY IN COMPARISON TO RISK MALIGNANCY INDEX (RMI) IN OVARIAN MASSES SCHEDULED FOR SURGERY

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Introduction: The goal of this study is to evaluate the use of an extra diagnostic modality of Doppler ultrasonography together with Risk malignancy Index (RMI) for assessing preoperative ovarian tumours in discriminating between malignant and benign masses. The aim is to determine the sensitivity, specificity and positive and negative predictive values of Doppler ultrasound and Risk Malignancy index (RMI) against histopathology examination. The other objectives are to identify the possible relationships between Doppler Ultrasonography and Risk Malignancy Index in discriminating malignant and benign ovarian masses and to identify the occurrence of ovarian malignancy in relation to demographic distribution.

Methods: A seventeen months of prospective cross-sectional comparative study was conducted from April 2008 till August 2009 at Gyne- Oncology Clinic at Hospital Sultanah Bahiyah, Alor Star Kedah involving 100 participants with ovarian masses at any size either symptomatic or asymptomatic. The test accuracy was performed taking histopathological diagnosis as a reference standard. Transabdominal grey scale ultrasonography a 4.2–6.5MHz transducer was used for initial transabdominal imaging. The RMI score was calculated with the attribution of values of 1 for premenopausal status and 3 for postmenopausal (M), versus ultrasound scores (U) and the absolute values of CA 125 serum levels (assayed by radioimmunoassay). Transvaginal Doppler ultrasonography using 5.2–7.0 MHz transducer was performed on those masses. For those patients inaccessible by transvaginal Doppler in view of huge ovarian masses they would be scanned with transabdominal Doppler ultrasonography using 2.6–7.0 MHz transducer. The ovarian masses, main ovarian vessels and the adnexal branches of the uterine vessels were examined for areas of flow and Pulsatility Index (PI) and Resistance Index (RI) were calculated.

Results: In this study, Risk Malignancy Index (RMI) has a higher sensitivity to pre-operative prediction of benign or malignant character of an ovarian tumour compared to Doppler Ultrasonography of Pulsatility Index (PI) or Resistance Index (RI) (78.8% versus 45.5%/48.5%, respectively). The specificity of RMI however is much lower than PI/RI (70.1% versus 95.5%). Doppler Ultrasonography's Pulsatility Index (PI) or Resistance Index (RI) has a higher positive predictive value compared to RMI (83.3%/84.2% versus 56.5%). The negative predictive value for PI/RI noted to be slightly lower compared to RMI (78%/79% versus 87%). The combination of the RMI with Doppler US had better results and able to discriminate between benign and malignant ovarian tumours. The sensitivity and specificity was 45.5% and 100.0%, respectively with PPV of 100.0% and NPV was 78.8%.

Conclusions: In conclusion, the combination of Doppler flow measurement and RMI scoring can be an extra diagnostic modality to differentiate benign from malignant ovarian tumours for a better preoperative diagnosis.

Supervisor:

Associate Professor Dr Mohd Rushdan

Co-supervisor:

Md Noor Shah Reza Johan Noor

EVALUATION OF OPTIC NERVE FUNCTIONS AND OPTIC NERVE PARAMETERS AFTER OPTIC NEURITIS

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Introduction: Certain degree of optic atrophy will almost always occur after optic neuritis. This could have consequences especially on non-acuity visual functions. Using optic nerve head (ONH) parameters, it is possible to evaluate the structural and functional damage of optic nerve after an episode of optic neuritis.

Objectives: To evaluate the optic nerve functions and ONH parameters post-single attack of optic neuritis, and to compare the functional and structural changes based on persistence of relative afferent pupillary defect (RAPD). In addition, to correlate the optic nerve functions and ONH parameters in eyes with post-single attack optic neuritis.

Methods: The study was conducted from July 2010 to June 2011. Fifty six subjects with history of single episode of optic neuritis and age-, sex- and race-matched controls underwent complete ocular examination. RAPD examination, LogMAR acuity, Humphrey visual field 30-2, Functional Acuity Contrast Test (F.A.C.T®) and Ishihara plates were performed to assess for optic nerve functions. ONH parameters were measured using Heidelberg Retinal Tomography III (HRT III).

Pearson's correlation was used to determine the correlation between the optic nerve functions and ONH parameters.

Results: Mean duration between recruitment process and optic neuritis was 5.21 years (SD 2.94). Significant reduction in the optic nerve functions was seen in optic neuritis group. Among the ONH parameters, there was significant RNFL thinning ($P < 0.001$), neuroretinal rim volume reduction ($P = 0.006$) and increase in the cup shape ($P < 0.001$), cup-disc area ratio ($P = 0.009$) and optic cup area ($P = 0.030$). The RNFL thickness demonstrated good correlation with optic nerve functions, in particular contrast sensitivity at high spatial frequency ($r = 0.7351$, $P < 0.001$). There was fair and inverse correlation between the cup shape and contrast sensitivity ($r = -0.4463$, $P = 0.016$). Subjects with persistent RAPD showed significant worse performance in visual acuity, colour vision and contrasts sensitivity score, compare to those without persistent RAPD. No significant difference was seen in the ONH parameters between these groups.

Conclusions: After an episode of optic neuritis, there were significant reduction in optic nerve functions and changes to ONH parameters. The RNFL thinning was especially significant. The good agreement between the optic nerve functions ONH parameters suggested that in addition to the optic nerve function tests, HRT III is possible a useful tool for post-optic neuritis evaluation, but not for disease severity assessment.

Supervisor:

Wan Hazabbah Wan Hitam

Co-supervisor:

Dr Ong Poh Yan

THE ASSOCIATION OF TOTAL IgE IN SERUM WITH SPECIFIC IgE IN TEARS AND SKIN PRICK TEST IN ALLERGIC CONJUNCTIVITIS PATIENTS

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Introduction: Allergic conjunctivitis is defined as the inflammation of the conjunctiva due to allergy resulted in photophobia, itchiness, tearing, redness, lid, & conjunctiva oedema. The major immunologic reaction is Type 1 IgE-mediated hypersensitivity reaction at the conjunctival level. Allergic conjunctivitis will lead to remodeling of ocular tissues resulted in sight threatening complication. IgE is a characteristic feature of Type 1 hypersensitivity. Detection of IgE (total & specific IgE) systemically or locally is important in objectively support the clinical diagnosis of allergic conjunctivitis.

Objectives: To determine and associate the total IgE in

serum with specific IgE in tears and skin prick test in allergic conjunctivitis patients.

Methods: A nonrandomized, cross-sectional study was conducted in 30 subjects of allergic conjunctivitis patients. Serum total IgE was measured with the ImmunoCap system. Specific IgE level for *Dermatophagoides pteronyssinus*, cat epithelium antigen, and cedar pollen were measured with the Immfast Check J1. Skin prick test to *Dermatophagoides pteronyssinus*, *Dermatophagoides farinae*, bloomia, cat epithelium, and egg yolk were performed.

Results: The mean of total IgE in serum was 869.82 kU/L (SD 1033.74) in allergic conjunctivitis subjects. Fourteen (46.6%) showed detection of specific IgE in tear fluid which ranged from class 2 to class 4. Subjects Skin prick test was positive in 40% of subjects. There was no statistically significant association between the total IgE in serum and specific IgE in tears ($P = 0.150$). There was no statistically significant association between the total IgE in serum and skin prick test ($P = 0.743$) in allergic conjunctivitis patients. There was also no statistically significant association between the classes of specific IgE in tear fluid and skin prick test ($P = 0.428$) However, a statistically significant association was found between the numbers of allergen detected in the tear fluid and the numbers of allergen detected in the skin prick test ($P = 0.049$).

Conclusion: Statistically significant association was found between the numbers of allergen detected in the tear fluid and the numbers of allergen detected in the skin prick test. However, there was no significant association between the level of total IgE in serum and the IgE in tears, between the level of total IgE in serum and skin prick test and between the classes of specific IgE in tear and skin prick test.

Supervisor:

Assoc Professor Dr Wan Hazabbah Wan Hitam

Co-supervisors:

Dr Diti Rahan Ishak

Dr Che Maraina Che Hussin

Dr Rosdan Salim

EVALUATION OF VISUAL ACUITY AND QUALITY OF LIFE IN PREDICTED EMMETROPIA AND LOW MYOPIA GROUPS FOLLOWING PHACOEMULSIFICATION WITH INTRAOCULAR LENS IMPLANTATION

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Introduction: Phacoemulsification with intraocular lens implantation is now a highly successful operation to provide a better quality of vision in patient with senile cataract.

Measurement of post-operative visual acuity and quality of life of two different groups of patients using different range of predictive refractive power of intraocular lens would give a guide in intraocular lens selection.

Objectives: To evaluate visual acuity and quality of life in predicted emmetropia and predicted low myopia groups following phacoemulsification with intraocular lens implantation.

Methods: A total of 139 patients with senile cataract attending Ophthalmology Clinic in HUSM, Kubang Kerian, Kelantan were randomized to be in either predicted emmetropia group or predicted low myopia group. Patients were selected according to the inclusion and exclusion criteria. At three months post-operative period, patients were assessed for distance and near vision and modified VF-14 questionnaires in Bahasa Malaysia were used to assess the vision related quality of life. Comparison of visual acuity and mean VF-14 score was made between the two groups. Data was analyzed by either chi-square or independent *t* test with *P* value less than 0.05 was considered significant.

Results: Thirty six patients (64.3%) in predicted emmetropia group and 30 patients (52.6%) in predicted low myopia gained distance vision LogMAR 0.3 or better. There was no statistically significant difference between the two groups (*P* = 0.209). In contrast, 50 patients (87.7%) in predicted low myopia group and only 27 patients (48.2%) in predicted emmetropia group gained satisfactory near vision. There was statistically significant difference between the two groups (*P* < 0.05). Quality of life in both group were good with mean VF-14 score of 94.5 (SD 2.68) in predicted low myopia group and 95.1 (SD 3.19) in predicted emmetropia group. There was no significant difference between both groups (*P* = 0.286).

Conclusion: More than 50% of patients from both groups gained satisfactory distance vision. More patients from predicted low myopia group gained satisfactory near vision. At least 50% of patients in both groups achieved satisfaction in overall vision related activities. The predicted low myopia group has significantly better quality of life in near vision activities.

Supervisor:

Dr Raja Azmi Mohd Noor

Co-supervisor:

Dr Azhany Yaakub

A STUDY ON A NEW INVENTION OF A PORTABLE EARLY TREATMENT DIABETIC RETINOPATHY STUDY (ETDRS) ACUITY METER

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Introduction: The gold-standard for visual acuity measurement is the Early Treatment Diabetic Retinopathy (ETDRS) chart but it is neither readily portable nor compact. A compact, portable and user-friendly visual acuity meter will better aid screening programs clinically.

Objective: To develop a portable and compact visual acuity meter and correlate the distant visual acuity measurement of the new device compared to the gold-standard ETDRS distant visual acuity chart according to visual acuity impairment and refractive errors.

Methods: A cross-sectional study with a non-randomised sampling was conducted involving participants in the Ophthalmology clinic, Hospital Universiti Sains Malaysia from April 2009 to January 2011. Phase 1 of the study involved the development of the new acuity meter based on visual acuity measurement principles and parameters and incorporating current technology. Two test distances were studied to decide the best visual acuity score outcome comparable to gold standard ETDRS chart. Based on Phase 1 studies, Phase 2 saw 170 participants enrolled and vision categories and refractive errors were documented. Visual acuities were recorded from the right eye only. The visual acuities were scored using logMAR values and the data was compared.

Results: The portable acuity meter performed better with a test distance of 10 centimeters and was used for Phase 2 studies. There was a moderate to strong correlation (*r* value of 0.70 – 0.94) between the visual acuity scores of the portable and reduced acuity meter and the standard ETDRS chart in age groups of 20 to 49 years old in the low vision category, while there was poor correlation (*r* value of -0.15 – 0.25) between the visual acuity scores of the portable and reduced acuity meter and the standard ETDRS chart in the similar age group with normal vision. The portable and reduced ETDRS acuity meter and standard ETDRS chart showed strong correlation (*r* value of 0.88) in visual acuity scores among myopics while showing weak correlation among hyperopics (*r* value of 0.14).

Conclusion: A portable and reduced ETDRS chart with testing distance of 10 centimeters was successfully developed and it showed a moderate to strong correlation in visual acuity scores compared to the standard ETDRS visual acuity chart test in participants with low vision. Further study should be made to improve its effectiveness in all categories of visual impairment.

Supervisor:

Associate Professor Dr Wan Hazabbah Wan Hitam

A STUDY ON CONJUNCTIVAL TGF- β LEVEL IN GLAUCOMA PATIENTS AND POST-PRIMARY AUGMENTED TRABECULECTOMY

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Introduction: TGF- β is known to play important role in the scarring process or end stage of healing process of filtering bleb that subsequently determined the success of filtration surgery. It was found that TGF- β level in the aqueous of glaucoma patient was higher compared to non glaucoma patients. Anti-metabolites such as Mitomycin C (MMC) is used to increase success rate of trabeculectomy surgery by inhibit fibrosis and suppress inflammation over filtration bleb.

Objective: To compare the level of conjunctival TGF- β between glaucoma patients and control group and to determine the level of conjunctival TGF- β pre and three months post-augmented primary trabeculectomy.

Methods: Primary open angle glaucoma (POAG) and primary angle closure glaucoma (PACG) patients who were planned for augmented primary trabeculectomy due to failure to achieve target pressure after maximum medical therapy was selected. Age matched non glaucoma patients were recruited as control. Impression cytology of the conjunctiva was obtained at 2 mm away from the superior limbus for both glaucoma and control groups. Impression cytology was obtained twice for the glaucoma group, one week prior and three months post-augmented trabeculectomy surgery. The conjunctiva cells obtained through impression cytology were tagged with anti TGF- β . The level of TGF- β was analysed by flow cytometry.

Results: A total of 18 patients (11 POAG and 7 PACG) who underwent augmented primary trabeculectomy surgery and 18 age-matched control patients were included. There was significant difference in conjunctival TGF- β level between glaucoma ($35.21 \pm 14.12\%$) and control patients ($14.96 \pm 6.34\%$) ($P = 0.001$). There was significant reduction in conjunctival TGF- β level post augmented trabeculectomy ($22.98 \pm 13.81\%$) ($P < 0.001$). A significant higher reduction conjunctival TGF- β level ($61.6 \pm 17.9\%$) was associated with complete success of trabeculectomy at 3 months post surgical intervention ($P = 0.029$).

Conclusion: TGF- β play a role in pathogenesis of glaucoma due to higher level of conjunctival TGF- β was found in glaucoma patients compared to control. The level of TGF- β was found to reduce significantly post augmented primary trabeculectomy, which suggest the potential role of MMC in reducing the scarring effect. However, in the absence of group without MMC, the effect of MMC in TGF- β is inconclusive. A larger sample size with longer duration of follow up is needed for future study.

Supervisor:

Associate Professor Dr Liza Sharmini Ahmad Tajudin

Co-supervisors:

Dr Banumathi Gurusamy

Associate Professor Dr Che Maraina Che Hussin

ASSOCIATION BETWEEN FUNDUS FLUORESCIN ANGIOGRAPHY LEAKING STATUS WITH EDEMA FEATURES OF HEIDELBERG RETINA TOMOGRAPH III AND OPTICAL COHERENCE TOMOGRAPHY IN DIABETIC MACULAR EDEMA PATIENT

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Objectives: To evaluate the findings between Fundus Fluorescein Angiography (FFA) leaking status with Heidelberg Retina Tomograph III (HRT III) and the agreement of edema features between HRT III and Optical Coherence Tomography (OCT) in diabetic patient with diabetic macular edema (DME).

Methods: Sixty seven patients with diabetic macular edema were selected for this study. They were subjected for HRT III to get topographic edema map, macula edema index (MEI) thickness map, and edema index value table. Same patient will undergo OCT to get topographic edema map and macular thickness value. Finally FFA examination was done to see the leaking area. All these examination were done to see the leaking status from each modality.

Results: Mean age group was 55.67 (SD 6.1) years and no gender variation seen. There were 11 patients (16.4%) in mild DME, 39 patients (58.2%) in moderate DME and 17 patients (25.4%) in severe DME. The sensitivity of topographic edema map, MEI thickness map, and edema index of HRT III were 78.1%, 77.8%, and 74.2% respectively in assessing DME status between FFA leaking status and HRT III edema features. The specificity of topographic edema map, MEI thickness map and edema index of HRT III were 76.6%, 73.3% and 72.6% respectively in assessing DME status between FFA leaking status and HRT III edema features. There is a substantially good agreement between topographic edema map and MEI thickness map from HRT III (kappa value 0.601; P value 0.000). Agreement between topographic edema map between HRT III and OCT has moderately good agreement (kappa value 0.485; P value 0.000). There is fairly good agreement (kappa value 0.252; P value 0.000) between edema index of HRT III and macular thickness of OCT to detect edema in a patient with DME.

Conclusion: Topographic edema map of HRT III has relatively better sensitivity compare with MEI thickness map and edema index in assessing diabetic macular edema status between FFA leaking status and HRT III edema features. There is a substantially good agreement between topographic edema map and MEI thickness map from HRT III. Topographic edema map from HRT III and OCT has moderately good agreement in detecting edema status while there is fairly good agreement between edema index evaluation from HRT III and macular thickness value from OCT.

Supervisor:

Associate Professor Dr Zunaina Embong

EVALUATION OF HANDGRIP STRENGTH LOSS IN PATIENTS WITH INTRA-ARTICULAR DISTAL END RADIUS FRACTURE FRYKMAN III TO VIII AT 1 YEAR POST-TRAUMA

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Introduction: Distal radius fractures (DRFs) are one of the commonest orthopaedic fractures seen and treated at hospitals with significant economic and morbidity impact on both the patients and the society. The treatment options for DRFs either conservatively or surgically depend on the severity of fractures, fracture patterns, age group and also the surgeon's preferences. Advancement in surgical treatments allows stable fixation of the fractures and facilitate early rehabilitation of the affected upper limb. This study assessed the objective outcome of intra-articular DRFs that were treated surgically at one year post-trauma using handgrip strength of the affected limb in comparison to the contralateral normal limb as the parameter for the assessment.

Objectives: The main objective of this study was to determine whether there was any handgrip weakness after one year post-trauma in patients with DRFs that were treated surgically by comparing the affected upper limb with the contralateral normal upper limb.

Methods: 90 patients aged between 18 to 60 years old who had DRFs and treated surgically at least one year ago were selected from the patient databases of Hospital USM and Hospital Pulau Pinang. The patients were screened according to the pre-determined inclusion and exclusion criteria by going through the case notes and interviews at the clinic. The patient's last radiographs taken at clinic follow-up prior to discharge were evaluated and the severity of the fractures was classified according to the Frykman's classification. Written consents were taken from the selected patients before proceeding with their handgrip strength measurements using the Jamar Hand Dynamometer for three times with five seconds interval of rest in between attempts. The mean of the measured handgrip strength were adjusted according to the hand dominance and then compared to the normal hand. The percentages of handgrip strength loss of the injured hand were used to determine if other factors such as age, gender, type of occupations and dominance of the injured limb have any influence on the amount of strength loss. The data were analyzed using the IBM® Social Science and Statistical Packaged (SPSS) software.

Results: 95.6% of the patients in the study had statistically significant handgrip strength loss after one

year post-trauma despite completed at least three months of physiotherapy with $P < 0.00$. The mean percentage of handgrip strength loss was 31.25% at the injured hand. 38.9% of the patients had injury to their dominant hands.

Conclusion: The percentages of handgrip strength loss was found to have significant relationship ($P = 0.022$) with severity of the fractures with lower percentages of strength loss in those with least severe fractures and higher percentages of strength loss in those with more severe fractures. There were no significant relationships between the percentages of handgrip strength loss with age group ($P = 0.146$), gender ($P = 0.309$), the types of occupations that the patients engaged in ($P = 0.637$) and hand dominance of the injured site ($P = 0.076$).

Supervisor:

Dr Abdul Nawfar Sadagatullah

PROFILING OF HAND INFECTIONS REQUIRING ADMISSION TO HOSPITAL UNIVERSITI SAINS MALAYSIA BETWEEN 2005–2010

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Introduction: Hand infection poses a diagnostic and treatment challenge to the medical fraternity. The complex nature of the anatomy involved and the vast microbiological spectrum demands a detailed understanding of the disease. Global literature regarding hand infection is relatively limited, more so within the Asian continent.

Objective: To study the pattern of hand infection among the Kelantanese population. It is aimed to delineate and update the bacteriological spectrum, characterize patterns and sites of injury, evaluate clinical and biochemical markers and possible causes and complications in patients with bacterial hand infection.

Methods: January 2005 to December 2010, all patients with hand infection requiring admission to the Orthopedic department of Hospital Universiti Sains Malaysia were reviewed retrospectively. We identified the aetiology, predisposing factors, associated co-morbidities, extent of involvement, nature, clinical presentation, biochemical markers, bacteriological pattern of involvement, and complications.

Result: 203 patients were studied for five years period ranging from January 2005 till December 2010. The age of patient treated for hand infections ranged from 1 year of age till 92 years of age. The sex distribution comprised of 63.5% males and 36.5 % females. Majority of patients consists of Malay ethnicity (97.5%). Trauma and animal bites is the most common cause of hand infections making approximately 61.1%

and 14.8% respectively. The site of infection was subcutaneous in 53.7% followed by skin, subfascial, and tendon in 23.6%, 8.4%, and 4.4% respectively. Zone II was most commonly involved in 30% of cases and approximately 48.3% had two or more zones involved. The mean duration of hospital stay was 9.2 days and the mean duration from presentation to the hospital till surgery was 2.5 days. The most common diagnosis was abscess in 50.2 % of patients followed by cellulitis, tenosynovitis and necrotizing fasciitis. 119 culture samples were analysed, 54.6% were pure *Staphylococcus Aureus* followed by 26.1 % of culture being mixed growth in origin. 48.8% of the patients in the study population were diabetics and comprised the majority of population with complications. Diabetics above the age group of 40 years revealed significant post operative stiffness ($P < 0.021$), post operative functional limitation ($P < 0.021$), requirement of multiple surgeries ($P < 0.027$) and increased duration of hospital stay ($P < 0.001$) as compared to non diabetics. The mean hospital stays among diabetics were 12.6 days.

Conclusion: This study confirms that *Staphylococcus Aureus* is responsible for most hand infection followed by mixed organism that was common among diabetics and those presenting following animal bites. Trauma and animal bites is the most common aetiology in the population studied. Zone 2 is the commonest location and subcutaneous infections are frequently encountered. Clinical parameters of presenting temperature, blood pressure, pulse rate and biochemical markers such as total white cell, erythrocyte sedimentation rate (ESR) and C- reactive protein (CRP) is not an indicator of severity or potential aetiology.

Supervisor:
Dr Mohammad Paiman

CARPAL TUNNEL SYNDROME – TISSUE CHANGES OF TRANSVERSE CARPAL LIGAMENT

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Introduction: Carpal tunnel syndrome (CTS) is the most common peripheral neuropathy with multifactorial aetiology. Over the years, almost all aspects of CTS had been studied, from the aetiology, risk factors, diagnostic tools, and varying kind of treatments. However, the aetiology is not fully understood. The study of histopathological changes of transverse carpal ligament can help us identify its etiology. The purpose of this study was to determine whether there are any consistent histopathological changes of the transverse carpal ligament which contribute to idiopathic carpal tunnel syndrome.

Methods: Ten patients who were diagnosed to have idiopathic carpal tunnel syndrome and underwent open

carpal tunnel release between October 2010 and June 2011 were reviewed. All patients had symptoms of CTS for at least 6 months and had thenar muscle atrophy. A full thickness section of central part of transverse carpal ligament was excised intraoperatively. All patients had no history of rheumatological disease and no anatomic anomaly. Using hematoxylin-eosin, the sections were stained and reviewed histopathologically. The histological sections were analyzed for the following: inflammation, oedema, fibrosis and chondroid metaplasia.

Results: The consistent findings were dense fibrocollagenous tissue separated into fascicles with intervening septae containing blood vessels, which was present in all the patients (100%). Within some fascicles, areas of dense hyalinised collagen are present. There was no oedema, evidence of inflammation or chondroid metaplasia seen.

Conclusion: In idiopathic carpal tunnel syndrome, the transverse carpal ligaments often showed benign fibrous tissue formation. It is believed that no metaplasia occurred and inflammation is not a part of the pathological process in idiopathic carpal tunnel syndrome.

Supervisor:
Dr Abdul Nawfar Sadagatullah
Co-supervisor:
Dr Venkatesh R Naik

p53 EXPRESSION AS A PROGNOSTIC MARKER IN STAGE III GIANT CELL TUMOUR OF THE BONE

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Introduction: Giant cell tumour of the bone is generally a benign neoplasm. However, it has a unique and an unpredictable behaviour where it tends to recur and metastasize to the lung. It seems to be more aggressive in Asian countries including Malaysia. To date, there are still many uncertainties in predicting the local recurrence and pulmonary metastasis of giant cell tumour.

Objectives: The aim of this study is to determine the effectiveness of p53 expression as a prognostic marker in predicting risk of local recurrence and lung metastasis in giant cell tumour of the bone.

Methods: Fifty cases of Stage III GCT of bone presented in HUSM from January 1999 to December 2009 were reviewed and assessed for p53 expression using immunohistochemical staining.

Results: In this study, there were 29 male and 21 female patients. The mean age was 36.42 years ranging between 19 and 66 years old. Majority of the patients were Malays (82%) followed by Chinese (16%) and Indian (2%). The main site of tumour location was around the knees (48%) followed by 28%

at the distal radius. Among the study subjects, 16% of cases had local recurrence and 24% presented with or eventually developed lung metastasis. Another 3% of cases presented with both local recurrence and lung metastases. The mean value of p53 expression was 37.68 with SD 28.33. The mean value of p53 expression was statistically significant in both groups comparing lung metastasis with non-lung metastasis group ($P < 0.001$) and recurrence with non-recurrence group ($P < 0.005$). The mean value of p53 expression in lung metastasis group (66.92) was slightly higher compared to local recurrence group (65.38).

Conclusion: p53 expression may be considered as a reliable prognostic marker to predict the risk of local recurrence and lung metastasis in Giant Cell Tumour of the bone.

Supervisor:

Dr Norazman Mat Zain

Co-supervisors:

Associate Professor Dr Wan Faisham Nu'Man Wan Ismail
Dr Salzihan

NOISE INDUCED HEARING LOSS AMONG GRASS TRIMMING WORKERS

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Introduction: Grass trimming workers work every day in a noisy environment as they carry the grass trimming machine on their back, such daily exposure for many years may contribute to noise induced hearing loss.

Objective: To assess the hearing status of the grass trimming workers in KB and the nearby areas and to determine the prevalence of noise induced hearing loss among them.

Methods: This was a descriptive cross-sectional study. The source population were from grass trimming worker works under USM Health Campus, Majlis Perbandaran Kota Bharu (MPKB), Majlis Daerah Pasir Puteh, Bachok, Ketereh and Tumpat. The data was collected at HUSM/ORL-HNS outpatient clinic to fill the Proforma, otoscopic examination, and hearing tests. Hearing tests consist of pure tone audiometry, tympanogram and distortion product otoacoustic emission.

Results: A total of 77 grass trimming workers participate in this study. All of them were male with age range from 20–53 years old with majority of them fall in age group of 40–50 years old. Two of the subjects were excluded as they have history of working in noisy job before and for at least 10 years. None of them use any protecting hearing device. Duration of work of grass trimmers were in between

1 to 33 years. The daily work was 4–5 hours with time of rest in between we found that 62 out of 75 grass (82.7%) trimming worker have noise induced hearing loss with characteristic notch at 6 kHz, 4 kHz, and 3 kHz. The noise induced hearing loss occurred in workers exposed to noise as early as two years in this job. The intensity of the noise from the machine is in between 91.3 to 100.7 dB in a fluctuant manner. The left ear was the predominant side that was affected by hearing loss. All of the subjects were having mild hearing loss.

Conclusion: The study showed that grass trimming job have occupational hazards of noise induced hearing loss. It occurs with one to two years working without any hearing protection device. The dip at 6 kHz is a significant early sign for noise exposure. We strongly recommend that all the workers use the hearing protection device while doing grass trimming.

Supervisor:

Associate Professor Dr Mohd Khairi

Co-supervisor

Dr Irfan Mohamad

A STUDY OF QUALITY OF LIFE IN CHILDREN WITH CANCER IN HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN, MALAYSIA

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Introduction: Holistic approach not only involves optimizing anti-cancer treatment but also improving Health Related Quality of Life. PedsQLTM Cancer Module is a widely used validated and developmentally appropriate questionnaire designed to measure pediatric cancer specific HRQOL for children age 2 to 18 years old. This is the first report validating and assessing children and also first proxy report in HRQOL of children treated for cancer using cancer-specific and developmentally-appropriate questionnaire for children in Malaysia.

Methods: The participants were children and their caretakers with various types of cancers who received treatment in Hospital Universiti Sains Malaysia (HUSM). The PedsQL consists of two sets of questionnaires, which are pediatric quality of life self-report for children ages 5–12 years old and parent-proxy report of child QOL questionnaire.

PedsQLTM Cancer Module was culturally and linguistically validated into Malay version as recommended by MAPI Research Institute. Linguistic validation included forward and backward translation, face, and content validation and reliability test. Reliability was determined by internal consistency using Cronbach alpha and test-retest reliability using Intra-class Coefficient Efficiency. The validated Malay version PedsQLTM 3.0 Cancer Module (Malay) was administered to 107 children with cancer (for

aged 5 to 18 years old) and 137 parental proxies (for aged 2 to 18 years old) in HUSM, Kelantan, Malaysia. Paired t test was used to determine the mean difference between child and parental proxy HRQOL scores (except for age group 2 to 4). Multifactorial ANOVA was used to compare the mean scores of HRQOL between groups (on treatment versus completed treatment).

Results: Cronbach's alpha coefficients ranged from 0.77 to 0.93 for children and 0.80 to 0.93 for parental proxy reports. The Intra-class correlation coefficient was between 0.88 to 0.92 for children reports and 0.86 to 0.91 for parental proxy reports. The parental-proxy HRQOL reports scored significantly lower compared to children across all age groups (68.9 (19.20) vs 73.4 (18.8)). The mean cut-off point for domain at risk of impaired HRQOL (less than 70) was 'Procedural Anxiety' across all age groups (between 39 to 65.9). After adjusted for gender and diagnoses, there was also significantly lower HRQOL score between 'on-treatment' and 'completed treatment' group across most of the age groups (except parental proxy reports for 2 – 4 and 8 –12 years old).

Conclusion: PedsQL 3.0 Cancer module (Malay version) was linguistically validated and comparable to original and other translated questionnaire. Administration of the questionnaire to children with cancer and their proxy revealed that parental proxy reports tend to underestimate the HRQOL of children. "Procedural Anxiety" was identified as the main HRQOL affected subscale in our children. Children on treatment generally had impaired HRQOL independent of gender and diagnoses.

Supervisor:

Associate Professor Dr Ariffin Nasir

Co-supervisor:

Dr Norsarwany Mohamad

OVERWEIGHT AND OBESITY AMONG PRIMARY SCHOOL CHILDREN IN KOTA BHARU, KELANTAN: PREVALENCE, MICROALBUMINURIA AND CARDIOVASCULAR RISK FACTORS

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Introduction: Childhood obesity has reached a significant proportion worldwide. It is associated with plethora of health consequences. Microalbuminuria (MA), as a novel marker of atherosclerosis, is associated with increased risk of cardiovascular morbidity and mortality. In adult, obesity and MA is strongly associated, but different studies in children revealed conflicting observations.

Objective: Primary objective was to investigate the prevalence of MA among overweight and obese primary school children in Kota Bharu, Kelantan. Secondary objective was to

identify prevalence of cardiovascular risk factors such as blood pressure (BP) and waist circumference (WC) among these children, and to assess association between these factors and MA.

Methods: A cross-sectional study was performed on standard five school children (mean age 11 years) from 10 randomly selected schools in Kota Bharu, Kelantan from June to October 2011. Eight hundred and forty five eligible students were examined. Anthropometric data such as height, weight, BP, WC, and skinfold thickness were taken. BMI (weight/height²) were calculated. Urine albumin concentrations were determined from random morning urine samples. Overweight (OW) was defined as BMI between +1 SD to < +2 SD, while obesity (OB) was BMI > +2 SD, using age and sex specific BMI charts from WHO. Microalbuminuria was defined as urine albumin concentration of 20 to 200mg/L.

Results: Prevalence of OW and OB were 14.6% (95% CI: 8.4–20.4%) and 14.7% (95% CI: 8.5 – 20.9%), respectively. MA was present in 9.8% of all the children. There is no significant difference in term of prevalence of MA between normal weight and OW/OB group (9.5% vs 8.9%, $P = 0.77$). Mean BP (systolic and diastolic) was higher in OW/OB group. Anthropometric data such as WC and skinfold thickness were significantly higher in OW/OB group. Within OW/OB group, at univariate level, there was no association between MA and BP, WC, or skinfold thickness. Multiple linear regression revealed only female gender was associated with MA (OR 2.475 (95% CI 1.509–4.059)).

Conclusion: Overweight and obesity among primary school children is common in Kota Bharu, Kelantan. The prevalence of overweight and obese within standard five school children was 14.6% and 14.7%, respectively. The prevalence of MA was 9.3%, and there was no demonstrable association between MA and obesity in our study population. Gender has strong association with prevalence of MA, where girls are 2 times more likely to develop MA compared to boys.

Supervisor:

Dr Noorizan Abdul Majid

Co-supervisor:

Dr Norazwany Yaacob

PREDICTORS OF GOOD FUNCTIONAL OUTCOME IN POST-STROKE PATIENT ATTENDING HOSPITAL RAJA PEREMPUAN ZAINAB II AFTER 6 MONTHS

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Introduction: Stroke is the second leading cause of death and adult disability globally. It is anticipated that by 2020, stroke will have moved from the sixth to fourth leading cause of lost disability adjusted life years.

Objectives: To determine the predictors of good functional outcome in post-stroke patients attending Hospital Raja Perempuan Zainab II (HRPZ II) after six months post-stroke.

Methods: The study included all stroke patients who were admitted to HRPZ II from December 2009 to December 2010. Patients were interviewed to assess their socio-demographic data and medical history. Then, clinical examinations were done to assess the stroke severity using Scandinavian Stroke Scale (SSS) and functional status based on Modified Barthel Index (MBI). The clinical data and investigations results upon admission were gathered from the medical records. Patients were reassessed at six months post-stroke on the Traditional Complementary Medicine usage, rehabilitation service, carer, and also functional status (using MBI).

Results: The response rate was 92%. They were 52 men and 41 women with mean age of 63.7 years (SD 10.3). Sixty-one point three percent had hypertension and 30.1% had diabetic. On admission 34.4% had good functional status and at six months later, 84.9% had good functional status. SSS score ($P < 0.05$) and age ($P < 0.05$) significantly predict good functional outcome.

Conclusion: The prevalence of good functional outcome after six months post-stroke was higher compared to other studies. Higher SSS score and younger age at occurrence of stroke significantly predict good functional outcome.

Supervisor:
Dr Azidah Abdul Kadir
Co-supervisor:
Dr Monniaty Mohamed

KNOWLEDGE, ATTITUDE AND PRACTICE ON COLD CHAIN AMONG GENERAL PRACTITIONERS IN KELANTAN

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Introduction: In Malaysia, the number of private doctors has been increasing each year. It is estimated that 20–30% of Malaysian population received immunization service from private clinics.

Objectives: The objectives of the study are to determine the knowledge, attitude, adherence and associated factors for optimal temperature of cold chain.

Methods: A cross-sectional study was conducted from April to December 2010 among general practitioners in Kelantan. The study used a self administered questionnaire, refrigerator inspection form, and recording of refrigerator temperature.

Result: There were 89 general practitioners involved

with response rate of 80.9%. The mean (SD) score for knowledge and attitude were 79.9% (SD 5.43) and 68.8% (SD 5.48) respectively. Only 14 (15.7%) of general practitioners were able to maintain optimal temperature. There were two significant associated factors for optimal temperature namely total working experience ($P : 0.035$) and duration of working as a general practitioner ($P : 0.048$).

Conclusion: Despite high percentage of good knowledge, the majority of respondents have poor attitude on cold chain. The adherence to recommended guideline was unsatisfactory. Total working experience and duration of working as general practitioners were significant associated factors for optimal temperature.

Supervisor:
Dr Norwati Daud
Co-supervisor:
Dr Norhayati Mohd Noor

PERIPHERAL NEUROPATHY AMONG NEWLY DIAGNOSED T2DM IN KLINIK KESIHATAN BANDAR KOTA BHARU

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Introduction: Diabetic foot is one of the most serious complications of diabetes leading to poor quality of life even a higher risk of mortality. Diabetic patients with peripheral neuropathy are at a higher risk of developing foot infection and ulcer. It causes a major source of morbidity, a leading cause of hospital bed occupancy and account for substantial health care, costs and resources. The onset of T2DM is often preceded by a long period of unrecognized metabolic abnormality, because of this reason; neural dysfunction can likely be detected at the time when the diabetes is diagnosed. All patients who are newly diagnosed for diabetes should be screened for loss of protective sensation to identify those at risk of foot ulceration. This enables the physician to design a treatment plan to determine patients' risk of developing diabetic foot and amputation.

Objectives: To study the effectiveness of weekly compared with daily iron supplementation among mild anemic pregnant women.

Methods: This was a cross-sectional study. A set of case report form (CRF) was completed by 254 newly diagnosed type II diabetes attended outpatient health clinic from July 2009 until June 2010. The CRF was divided into 4 sections. The Section 1 consisted of socio-demographic data; section 2 was patient's parameter such as blood pressure, heart rate, height, weight and body mass index while section 3 consisted of clinical finding of Fundus Camera, ECG and Monofilament Testing. Section 4 consisted of blood investigation results.

Other information such as IHD, other illnesses and type of medication were taken from patient's medical record and the data was filled up by the researcher.

Results: The prevalence of peripheral neuropathy among newly diagnosed type II diabetes was 8.3%. The significant associated factors that contributed to the development of peripheral neuropathy were age of the patients and the presence of retinopathy.

Conclusion: The prevalence of peripheral neuropathy among newly diagnosed type II diabetes was high. The detection of the peripheral neuropathy should be done to all type II diabetic patients at diagnosis so that the preventive measures could be taken to prevent diabetic foot disease.

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

DEPRESSION AMONG CAREGIVERS OF CHILDREN FOLLOWING TRAUMATIC BRAIN INJURY IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Although it is generally accepted that traumatic brain injury leads to significant degree of depression among the caregivers, little is known about such impact on the population of North East Coast of Peninsular Malaysia. Hospital Universiti Sains Malaysia, being the only referral centre for traumatic brain injury in this region, it provides a suitable place to investigate the degree of depression and the possible risk factors.

Objective: To determine the prevalence of depression and the associated factors among caregivers following traumatic brain injury in Hospital Sains Malaysia.

Methods: This is a cross-sectional study involving 208 caregivers of children following traumatic brain injury. They were recruited during follow up at the Neurosurgical Outpatient, Hospital Universiti Sains Malaysia from April 2010 until March 2011. Duration since injury ranged from 1 week to 75 months. The caregivers were requested to answer a set of guided questionnaires on socio demographic and a self administered Beck Depression Inventory as the instrument to screen for depression. Those who had scored more than 10 were considered depressed. The medical records of the TBI patients were reviewed for the injury factors.

Results: The prevalence of depression was 38.5% (95% CI: 31.89, 45.11). Depression among caregivers was significantly associated with income per capita ($P = 0.035$). Depression among caregivers was not associated with severity of injury, outcome of injury, duration since injury or mode

of injury. Socio demographic factors of the caregivers and the TBI patients, were also not associated with depression following traumatic brain injury, both by simple and multiple logistic regression.

Conclusion: Prevalence of depression among caregivers of children following traumatic brain injury in Hospital Sains Malaysia was very much higher than the general population. Household income per capita was found to have significant association with depression. Other associated factors tested were found to have no association with depression among caregivers. Thus, depression has to be expected and assessed accordingly among the caregivers especially those with low household income per capita.

Supervisor:
Dr Imran Ahmad
Co-supervisor:
Dr Adibah Ismail

THE EFFECTIVENESS OF WEEKLY VERSUS DAILY IRON SUPPLEMENTATION AMONG MILD ANEMIC PREGNANT WOMEN

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Introduction: Anemia is a public health problem that affects rich and poor population. Pregnant women are particularly vulnerable. Supplementation of diet with iron compounds during pregnancy has been recommended by international and local organizations for women of reproductive age. Traditionally, women have been prescribed iron supplement during pregnancy as daily regime. Recently, weekly supplementation has been suggested, since it takes advantage of the turnover time of intestinal mucosa cells favoring iron absorption regulation and is more economical and safer from the public health perspective.

Objectives: To study the effectiveness of weekly compared with daily iron supplementation among mild anemic pregnant women.

Methods: This is a randomized controlled trial comparing the effectiveness of a weekly versus daily iron supplementation. Pregnant women at 12–20 weeks of gestation with hemoglobin of 9–11 gm/dL were enrolled in the study. Total of 70 women were randomly allocated to receive 200 mg oral dose of ferrous fumarate daily and 400 mg of ferrous fumarate weekly. Hemoglobin and ferritin level were estimated at baseline and after eight weeks of iron supplementation. Analysis of covariance (ANCOVA) was performed to compare the mean hemoglobin and ferritin level between the two groups at the end of study using baseline haemoglobin, ferritin, age, race, parity, period of gestation, income, and education as co-variates.

Results: A total of seventy mildly anemic women were recruited. Thirty five were assigned to daily group and another thirty five women were assigned to weekly group. There were no significant different in demographic and laboratory characteristic between the groups at the beginning of study. At the end of eight weeks supplementation there was no significant difference in the hemoglobin and ferritin values between the two groups.

Conclusion: The supplementation of mild anemic pregnant women with 200 mg ferrous fumarate daily was as effective as weekly iron supplementation of 400 mg ferrous fumarate in terms of hemoglobin and ferritin response under conditions resembling the routine antenatal care.

Supervisor:

Dr Adibah Hanim Ismail

Co-supervisors:

Dr Juwita Shaaban

Dr Ambreen Tayyab

EFFECT OF PELVIC FLOOR MUSCLE EXERCISE EDUCATION ON KNOWLEDGE, ATTITUDE AND PRACTICE AMONG PREGNANT WOMEN IN ANTENATAL CLINIC HUSM

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Introduction: Pelvic floor muscle exercise (PFME) is a proven conservative therapy and it is proven as the first line treatment for women who are suffering from pelvic floor muscle disorder (PFMD). Despite the high prevalence of PFMD among women in general as well in among pregnant women, PFME is not well educated that results in infrequently practice among women.

Objectives: To assess the effect of PFME education on KAP score among antenatal mothers in antenatal clinic HUSM.

Methods: This was a single arm interventional study conducted from June 2010 to December 2010, among 138 antenatal mothers attending antenatal clinic through systematic random sampling. However, only 121 of the respondents completed the study. The self administered KAP validated questionnaires were given on first visit and educational PFME class was delivered on their second visit (34–36 weeks of pregnancy) and third visit (37–38 weeks of pregnancy). The respondents were followed up after two months post-partum with the same KAP questionnaires. Data of the 121 respondents who completed the study was analyzed using SPSS version 18.

Results: Many of the respondents are multiparous and grandmultiparous women. There are 32.2% (95% CI: 0.24, 0.40) of the respondents that have urinary incontinence and

almost half of them do suffer from it and need some kind of protection. The mean score for knowledge pre-intervention was 24.98 and increase to 29.66 post-intervention. The attitude score also had improved from 24.25 to 28.03 whereas the practice score had increased from 3.51 to 9.90. All of these changes were found statistically significant with the *P* value of < 0.001. Women with no baseline information on PFME before the intervention was found to be significantly associated with the practice change following the educational class.

Conclusion: There is a need for greater efforts towards increasing PFME awareness among our antenatal mothers of common health concern that is associated with PFMD and the proven positive effects of PFME. So, we recommend PFME should be implemented in every antenatal class since it is not well established. Training for trainers and clinical practice guidelines should be developed to make sure primary care practitioners, obstetrics and gynecology doctors and physiotherapists are well informed and trained for the benefit of the patients.

Supervisor:

Dr Rosediani Muhammad

Co-supervisors:

Dr Norwati Daud

Dr Nik Rosmawati Nik Hussin

A PREVALENCE OF OBESITY AND ASSOCIATED RISK FACTORS AMONG MALE SOLDIERS IN MELAKA

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Introduction: Body mass index currently used as a part of the health indicator in Malaysian Armed Force health service. A few studies worldwide showed that the prevalence of obesity is increasing in the general population and also army community recently.

Objectives: This study was conducted to determine the prevalence of obesity among male soldiers in Melaka and its associated factors.

Methods: A cross-sectional study was performed on 392 Malaysian Army personnel aged more than 20 years old between January and July 2008. Anthropometric measurements, blood pressure, and a brief medical history were obtained in a questionnaire. The fasting serum lipid profile and fasting plasma sugar were obtained from all the subjects. The 10 years coronary heart disease risk was calculated using the Framingham score. The variables for the Framingham score age, smoking status, systolic blood pressure, total cholesterol, and HDL-C were included. Data was analyzed using SPSS version 16.0.

Results: The results showed that the prevalence

of obesity among male soldiers in Melaka was 15.6%. The mean value of age, blood pressure among obese personnel was significantly higher than those of non-obese personnel. There was no significant mean difference for anthropometric measurement between combat and non-combat group. Multiple logistic regressions revealed that the associated factors for obesity among male soldiers in Melaka were age, duration of service, body fatness, smoking habits, waist circumference, and exercise frequency.

Conclusion: In conclusion, the prevalence of obesity among male soldiers in Melaka was high and positively correlated with age, duration of service, body fatness, smoking habits, waist circumference and exercise frequency.

Supervisor:

Dr Harmy Mohd Yussof

Co-supervisors:

Dr Norwati Daud

Dr Rohana Abd. Jalil

THE EFFECTS OF XYLITOL CHEWING GUM ON ORAL ENVIRONMENT AMONG MALAYSIAN INFANTRY PERSONNEL INVOLVED IN MILITARY OPERATION

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Introduction: Oral health is an important aspect of combat readiness in the armed forces. However, certain conditions during military operation can hinder oral hygiene practice and expose military personnel to oral health problem. Many studies have consistently showed positive potential of xylitol chewing gums as a preventive strategy in maintaining oral health.

Objectives: To study the effects of xylitol chewing gum on oral environment (salivary parameters: hydration status of the labial mucosa, salivary resting pH, stimulated flow rate, buffering capacity; plaque pH, and oral hygiene status) among Malaysian infantry personnel involved in military operation in the jungle near Malaysia-Thailand border.

Methods: A community intervention study was conducted on 307 Malaysian infantry personnel assigned into a control group ($n = 147$) and an intervention group ($n = 162$). The intervention group consumed xylitol chewing gum for five minutes, three times a day for the period of the military operation (2 months). The daily dose was 4.2 g. The respondents underwent saliva testing, followed by oral examination and plaque test. Saliva parameters and plaque pH were assessed using Saliva-Check BUFFER and Plaque - Check +pH (GC Corporation, Japan) respectively, while oral hygiene status was measured using Simplified Oral Hygiene Index (OHI-S). The baseline data recorded a few days before undergoing military operation were compared with the data

recorded after 2 months. Repeated measures ANOVA was utilised to analyse the differences and changes in means between, within and within-between groups while repeated measures analysis of covariance (RM ANCOVA) was used during multivariable analysis to control for confounders.

Results: There was a significant change of hydration status with time of intervention among respondents in both groups ($P < 0.05$). There were significant increases in mean buffering capacity and mean plaque pH and a significant decrease in mean OHI-S among respondents in the intervention group after the intervention period ($P < 0.001$). There were significant drop in mean resting pH ($P = 0.008$), mean buffering capacity ($P = 0.012$) and mean plaque pH ($P < 0.001$) and a significant increase in mean OHI-S ($P < 0.001$) among respondents in the control group. In terms of between groups, respondents in intervention groups had significantly higher mean buffering capacity, 8.50 (95% CI: 8.01, 8.98) and mean plaque pH, 6.20 (95% CI: 6.14, 6.25) compared to control group, 7.12 (95% CI: 6.65, 7.58); 5.95 (95% CI: 5.91, 6.00) ($P < 0.001$). In terms of group effect with regard to time, there were significant differences in mean buffering capacity, mean plaque pH and mean OHI-S between intervention and control groups after intervention period.

Conclusion: Chewing xylitol gum can protect the oral health of infantry personnel during military operation in the jungle by improving their hydration status, buffering capacity, plaque pH, and OHI-S.

Supervisor:

Associate Professor Dr Normastura Abd. Rahman

Co-supervisors:

Associate Professor Dr Azizah Yusoff

Dr Sarimah Abdullah

THE SEROPREVALENCE, SPECTRUM OF CLINICAL MANIFESTATIONS, OUTCOME AND ASSOCIATED FACTORS OF LEPTOSPIROSIS IN KELANTAN: A HOSPITAL-BASED STUDY

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Introduction: Leptospirosis is a zoonotic disease in tropical regions, caused by a pathogenic spirochete of the genus *Leptospira* and has emerged as a globally important infectious disease. Human infection results from exposure to infected urine of carrier animals, either directly or indirectly, via contaminated environment. The clinical manifestations of leptospirosis are very broad, ranging from a subclinical to a life-threatening infection and can mimic many other diseases such as dengue fever, dengue hemorrhagic fever, malaria, meningoencephalitis, etc.

Objectives: This study was conducted to determine

the seroprevalence, clinical manifestations and associated factors of leptospirosis among patients with fever in Kelantan hospitals.

Methods: A cross-sectional study was conducted among 999 patients with fever admitted to 10 hospitals in Kelantan in 2010. An interviewer-guided Patient Proforma Sheet was used. IgM Enzyme-linked Immunosorbent Assay test (IgM ELISA) and Microscopic Agglutination Test (MAT) for leptospirosis were performed. Multiple logistic regression analysis was performed to determine factors associated with leptospirosis.

Results: From 999 respondents, male and female percentages were equivalent and majority was Malay (94.7%). Age of respondents ranged from 18 to 94 years old. IgM ELISA test was positive in 8.8% ($n = 88$) of the cases and 2.3% ($n = 23$) was indeterminate. The seroprevalence of leptospirosis was 8.4% (95% CI: 6.8, 10.3) ($n = 84$) by MAT. More than 50% of the leptospirosis cases had headache, myalgia, arthralgia, and vomiting as the most frequent clinical symptoms. Logistic regression analysis showed that the significant associated factors for leptospirosis were high risk occupation group (OR: 1.95, 95% CI: 1.22, 3.13) and history of recent recreational activity (OR: 2.36, 95% CI: 1.46, 3.85).

Conclusion: There was a low seroprevalence of leptospirosis among fever patients in Kelantan hospitals. High risk occupation group and recent recreational activity have significantly twice or higher risk of leptospirosis infection compared to low risk occupation group and those without recent recreational activity. Extensive epidemiological and clinical knowledge, initiation of preventive measures by multisectoral approach and more sensitive diagnostic testing are needed to identify, treat and prevent leptospirosis.

Supervisor:

Dr Aziah Daud

Co-supervisor:

Associate Professor Dr Nor Azwany Yaacob

THE RELATIONSHIP BETWEEN DIABETES MELLITUS AND SPUTUM CONVERSION IN SMEAR POSITIVE PULMONARY TUBERCULOSIS PATIENTS

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Introduction: Diabetes mellitus is a well known risk factor for tuberculosis. With the increasing prevalence of type 2 diabetes mellitus in Malaysia and particularly in Kelantan state, many tuberculosis patients will have concomitant diabetes mellitus. At this moment, not much information about the effect of diabetes mellitus on the treatment outcome of tuberculosis.

Methods: A retrospective study, included total of

256 patients with smear positive pulmonary tuberculosis diagnosed in 2006 until 2011 in Hospital Universiti Sains Malaysia. The outcome which was sputum conversion was compared between patients with tuberculosis who had diabetes mellitus and patients with tuberculosis who did not have diabetes mellitus.

Results: Diabetes mellitus was diagnosed in 46.1% of patients with tuberculosis and was associated with older age. After two months of intensive phase, results of sputum smear examination was found more often positive in diabetic patients (63.6% vs 35.5%). Addition to that, raised ESR and low albumin level were found to have negative effect for sputum conversion among pulmonary tuberculosis patients.

Conclusion: Diabetes mellitus seems to have negative effect on sputum smear conversion among tuberculosis patients. Screening for diabetes mellitus and strict glycaemic control may improve the outcome of tuberculosis treatment.

Supervisor:

Dr Shaharudin Abdullah

Co-supervisor:

Dr Alwi Besari

THE RELATIONSHIP BETWEEN DIABETES CONTROL AND CORONARY ARTERY STENOSIS IN PATIENTS DIAGNOSED WITH CORONARY ARTERY DISEASE

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Introduction: There have been many studies done, showed the correlation between CAD and diabetes control, but no study done to evaluate the correlation between HbA1c level and severity of coronary artery stenosis. We conduct a study to evaluate the association between HbA1c level and the degree of coronary artery stenosis beside other factors that can lead to severity of coronary artery stenosis.

Methods: 124 adult patients with type 2 DM underwent angiogram between 1st January 2009 till 30th October 2011 in HUSM were selected. Their respective case-notes were reviewed and all the relevant data recorded.

Result: 88.7% were Malay, reflecting the local demographic while 64.5 % were male. The mean age was 56.8 (SD 10.2) years, while the mean HbA1C 7.7 (SD 1.9)%. 41.1% were overweight patient and 43.5% were obese patient. For other risk factor, 37.1 % had type 2 diabetes mellitus more than 10 years, 53.2% were smoking, 70.2% had hyperlipidaemia and 87.1% had hypertension. 56.5% had severe coronary artery stenosis and 81.0% of them had HbA1c more than 7%. Univariate analysis comparing mean HbA1c in normal group with other levels of coronary artery disease showed a significant association with the severity of coronary stenosis. Multivariate analysis identified male (OR = 3.71, 95% CI 1.75,

5.67, $P < 0.001$), DM more than 10 years (OR = 3.78, 95% CI 1.63, 5.92, $P = 0.001$), smoking (OR = 4.47, 95% CI 2.47, 6.47, $P < 0.001$) and patient with HbA1c more than 7% (OR = 6.82, 95% CI 4.65, 9.05, $P < 0.001$) are associated with higher risk for severe coronary artery stenosis. Among the study population, there is no significant increased in severity of coronary stenosis based on BMI or LDL level.

Conclusion: Majority of coronary artery disease patients in HUSM is male, overweight and obese, hypertensive and hyperlipidaemia. There is relationship between male, smoking, duration of diabetes mellitus and HbA1c level with severity of coronary artery stenosis.

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

A COMPARATIVE STUDY ON HIGH DOSE VERSUS LOW DOSE ORAL ESOMPERAZOLE IN THE PREVENTION OF POST-ENDOSCOPIC VARICEAL LIGATION ULCER BLEEDING IN HOSPITAL SULTANAH BAHYIAH (HSB)

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Introduction: Elective endoscopic variceal ligation (EVL) is performed to reduce the risk of oesophageal variceal bleeding. However, EVL is associated with side effects including chest pain, dysphagia, odynophagia as well as post-ligation bleeding due to post-EVL ulcers. Gastric acid reflux worsens these ulcers and delays the healing. Proton pump inhibitors (PPIs) are proven potent pharmacological agents that reduce gastric acid effects. The aim of this study was to assess the efficacy of two different doses of esomeprazole, a PPI in the prevention of post-EVL ulcer bleeding.

Objectives: This study is aimed at evaluating the effectiveness of different doses of proton pump inhibitors (esomeprazole) in preventing post-endoscopic variceal ligation ulcer bleeding. It was also to determine the demographic characteristics of subjects with liver cirrhosis as well as the healing of post-endoscopic variceal ligation ulcer at three weeks post-procedure.

Methods: We performed a single-blinded, randomised controlled trial at the endoscopy unit, Hospital Sultanah Bahiyah (HSB). Sixty-four patients were randomised into this study between June 2010 and June 2011. Subjects in the low-dose arm received oral esomeprazole 40 mg once daily while the high-dose arm received 40 mg twice-daily dosing for 21 days. All subjects then underwent a repeat endoscopy at 21 days. The primary endpoint was post-ligation ulcer bleeding.

Result: All 64 patients completed the protocol. No

subjects in both arms experienced any variceal bleeding during the study. However the low-dose arm subjects had a higher incidence of ulcer at 21 days.

Conclusion: Low-dose esomeprazole was equally effective as high-dose in preventing post-EVL ulcer bleeding but with a slower rate of ulcer healing.

Supervisors:
Dr Nazri Mustaffa
Dr Kiew Kuang Kiat
Co-supervisor:
Dr Nor Aizal Che Hamzah

CIGARETTE SMOKING IN SCHIZOPHRENIA: RELATIONSHIP TO PSYCHOPATHOLOGY AND WORKING MEMORY

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Introduction: The rate of smoking in patients with Schizophrenia was higher when compared to general population or patients with other psychiatric illnesses. Cigarette smoking is dangerous to health and this increases smoking-related morbidity and mortality in Schizophrenia. Hence, it is important for clinicians to understand why patients with schizophrenia smoke in order to adapt treatment schemes. Patients with schizophrenia may smoke as a form of self-medication to relieve side effect of medication, to reduce symptoms of the illness and to improve the cognitive function.

Objectives: The aims of the study were to investigate the association of cigarette smoking with verbal working memory (which is a part of cognitive function) and psychopathology of patients with schizophrenia.

Methods: This was a cross-sectional study. The subjects comprised of 53 stable patients diagnosed with Schizophrenia (DSM-IV TR) attending psychiatric clinic of Hospital Universiti Sains Malaysia (HUSM) from July to December 2011. Participants were selected through convenience sampling. This study involved patients who are heavy smokers (> 20 cigarettes per day) or non-smokers (0-5 cigarettes per day). The verbal learning memory was assessed with validated Malay Version of Auditory Verbal Learning Test (MVAULT) and the psychopathology was assessed with PANSS. Descriptive analysis, independent t test, Pearson's chi-square test, simple and multiple linear regressions were used in the data analysis.

Results: There were no significant differences between smokers and non-smoker patients with schizophrenia, in most of the socio-demographic factors except for the gender and educational level. Learning capability was slightly better in smokers but the differences were non-significant. Smokers had more severe positive symptoms and less severe

negative symptoms but the differences were insignificant. There was an association between immediate memory with frequency of admission and negative and general symptoms of Schizophrenia.

Conclusion: This study failed to show significant difference in memory and psychopathology between smoker and non smoker patients with schizophrenia.

Supervisor:

Dr Zahiruddin Othman

Co-supervisor:

Dr Wan Norhaida Wan Abdullah

QUALITY OF LIFE OF SCHIZOPHRENIA PATIENT WITH TARDIVE DYSKINESIA

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Introduction: Tardive dyskinesia (TD) has been recognized as one of the most important extrapyramidal adverse effect of antipsychotics. TD is so difficult to treat and at present, there are no uniformly safe and effective treatments for TD. Quality of life (QOL) is has been recognized as an important indicator of how well patients with schizophrenia can function. The physical disabilities due to TD can affect patients QOL and their function.

Objective: Aim of this study is to determine the association between tardive dyskinesia and quality of life and its association with socio-demographic and clinical variables.

Methods: This is a cross-sectional study. The subjects consisted of 71 stable schizophrenia (DSM-IV) patients with tardive dyskinesia attending psychiatric clinic of Hospital Raja Perempuan Zainab II (HRPZ II) and Hospital Universiti Sains Malaysia (HUSM) from January to November 2011. They were selected through convenience sampling. TD and QOL were assessed with Abnormal Involuntary Movement Scale (AIMS) and Quality of Life Scale (QLS) respectively. The psychopathology was assessed with PANSS. The main measured outcome in this study was QLS total score which is considered as dependent variable. Descriptive analysis, simple linear regression, and multiple linear regression were appropriately used in data analysis.

Results: Majority of patients were Malays 70 (98.6%), male 50 (70.4%), single 45 (63.4%), unemployed 52 (73.2%), on typical antipsychotics prior to onset of TD 68 (95.8%) and had mild symptoms with mean PANSS total score 49.8 (SD 13.5). The mean duration of illness and mean duration on treatment were 22 (SD 9.9) and 21.8 (SD 10.1) respectively. The mean daily dose of antipsychotic prior to onset of TD was 431.78 mmg (SD 221.49) and current mean daily dose was 300.46 mg (SD 187.14). 39 (54.9%) patients had mild TD, 22 (32.4%) moderate and 9 (12.7%) severe TD. The mean QLS

total score was 52.1 (SD 26.7) with the majority of the patients 54 (76.1%) scored lower than mid score, which indicated low level of quality of life. There were significant association between employment status, marital status, PANSS negative symptoms and severity of TD.

Conclusion: This study found that QOL was low among schizophrenia patient with TD and its was significantly associated with severity of TD, employment status, marital status, and PANSS negative symptoms.

Supervisor:

Dr Zahiruddin Othman

FEMALE SEXUAL DYSFUNCTION AMONG BREAST CANCER SURVIVORS IN KELANTAN AND ITS RELATED FACTORS

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Introduction: Sexual dysfunction is a frequent side effect of cancer treatment. Research suggests that about 50% of long-term breast cancer survivors experience global and profound sexual dysfunctions. Not like many other side effects of cancer treatment, sexual problems continue for few years after the treatment. Furthermore, this sexual problem will have an effect on marital relationship and overall quality of life.

Objectives: To determine the sexual dysfunction among breast cancer survivors attending follow up in oncology clinic HUSM and its related factors.

Methods: This was a cross-sectional study using a self administered validated questionnaire. Samples were taken among breast cancer survivors attending follow up at oncology clinic HUSM. The socio-demographic and clinical profiles were analyzed as descriptive statistics. The dependent variable was the sexual function score which was analyzed as a numerical variable using ANCOVA to see whether sexual dysfunction is associated with breast cancer survivors after controlling for several covariates. The sexual scores were then changed to categorical variables. The factors related to the sexual dysfunction in breast cancer patients were analyzed using multiple logistic regressions to see the associated factors.

Results: There were 61 breast cancer survivors eligible for the study. 61% presented at early stages of illness. The median duration of illness since first diagnosis was 4.0 (3.8) years. Majority of the breast cancer survivors had mastectomy done (70.5%), underwent chemotherapy (88.5%), radiotherapy (88.5%), and received anti hormone treatment (83.6%). The quality of life of breast cancer survivors was good with mean PGWBI score of 74.08 (14.79). 11.5% of the breast cancer survivors reported anxiety in self rating scale, and another 6.6% had depression. Global sexual dysfunction was seen in

24.6% breast cancer survivors, and it was higher compared to a matched group without breast cancer, even after controlling for other confounders. The most common sexual dysfunction was sexual dissatisfaction (44.3%) followed by sexual desire disorder (31.1%) and sexual arousal disorder (23.0%). Sexual dysfunction in breast cancer survivors was associated with husband's age, duration on anti-hormone therapy, quality of life and depression.

Conclusions: Sexual dysfunction is higher among breast cancer survivors compared to individuals without breast cancer. Sexual dysfunction in breast cancer survivors are related to husband's age, duration on anti-hormone therapy, quality of life and depression.

Supervisor:

Associate Professor Dr Hasanah Che Ismail

Co-supervisor:

Professor Dr Biswa Mohan Biswal

CAREGIVER BURDEN AMONG THE PRIMARY CAREGIVERS OF PEOPLE WITH SCHIZOPHRENIA IN HOSPITAL BAHAGIA ULU KINTA: A CROSS-SECTIONAL STUDY

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Introduction: Caregiver burden among primary caregivers has been a recognised outcome of the caregiving role for the people with schizophrenia. This has led to various affect to both the caregivers and the people with schizophrenia. An important effort in recognising this would allow for better prevention and treatment modalities.

Objective: This was a cross-sectional study to determine caregiver burden, depression, anxiety, stress and the functionality of people with schizophrenia for primary caregivers attending community service or standard outpatient care in Hospital Bahagia Ulu Kinta (HBUK).

Methods: A total of 109 primary caregivers of people with schizophrenia were enrolled after fulfilling the inclusion criteria. These were from the community service as well as standard outpatient care of HBUK. All those selected were assessed using the Demographic Questionnaire, Burden on Family Interview Schedule (BFS), Depression, Anxiety and Stress Schedule (DASS) and Personal and Social Performance scale (PSP).

Results: Subjective caregiver burden was reported in 41.3% ($n = 45$) of the primary caregivers. The other main burden reported was in term of finance at 46% to 57% ($n = 42-52$) and leisure time at 34% to 37% ($n = 31-34$). In predicting caregiver burden, community service was protective ($P = 0.002$) while depression ($P = 0.001$) and the functionality ($P = 0.001$) of the people with schizophrenia contributed

to worsening caregiver burden. The factors that worsen depression among the primary caregivers were the present of stressors ($P = 0.016$) and caregiver burden ($P = 0.004$).

Conclusions: Caregiver burden is significant among primary caregivers. Being in community service lowers burden but the functionality of the people with schizophrenia and the present of depression continues to worsen it. Depression has been found to be associated with caregiver burden and stressors.

Supervisor:

Associate Professor Dr Hasanah Che Ismail

Co-supervisor:

Dr Cheah Yee Chuang

SEXUAL DYSFUNCTION IN MALE PATIENTS WITH SCHIZOPHRENIA IN REMISSION

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Introduction: Despite the high prevalence of sexual dysfunction among male schizophrenia patients, there is still a paucity of research on this area. The knowledge on sexuality in schizophrenia patients remains scarce particularly on the potential factors that may increase the risk of sexual impairment.

Objectives: To determine the prevalence and the factors associated with sexual dysfunction in male patients with schizophrenia in remission.

Methods: This is a cross-sectional study with non-probability sampling method in Taiping Hospital psychiatric outpatient clinic over a 7 months period. A validated Malay version of the International Index of Erectile Function (Mal-IIIEF-15) was administered to male schizophrenia patients in remission who attended the clinic for the assessment of sexual function over four weeks duration in the domains of erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction. Socio-demographic characteristics, medication, severity of schizophrenia symptoms (with Positive and Negative Syndrome Scale), presence of anxiety and/or depressive symptoms (with Malay version of the Hospital Anxiety and Depression Scale), body mass index, and waist circumference were analysed for any association with the sexual domains using multiple logistic regression. Comparison of the mean scores of each of the five sexual domains between patients and controls was performed using Analysis of Covariance (ANCOVA).

Results: A total of 111 male schizophrenia patients in remission and 111 controls were recruited for the study. Twenty (66.7%) of the 30 married patients compared to one (1.2%) of the five unmarried patients with a partner had sexual intercourse over the four weeks' assessment period.

The remaining 76 (68.5%) of the unmarried patients had no partner and not sexually active in sexual intercourse but engaged in masturbation as their primary sexual activity. All the five domains of sexual functioning showed a high prevalence of dysfunction ranging from 78.4% to 97.1% with orgasmic dysfunction being the least impaired and intercourse satisfaction the worst impaired. The results on the sexual dysfunction were significantly independent when compared to the controls. The prevalence of sexual dysfunction was higher in the patient group with more of the married patients had erectile, orgasmic, and overall satisfaction impairments than the married controls. Only orgasmic dysfunction had significant predictive association with race i.e. the Chinese were at lower risk for impairment than the Malays (OR=0.23; 95% CI: 0.07, 0.76; $P = 0.018$), education i.e. patients with higher educational level were at higher risk for dysfunction than those with primary education (OR=6.49; 95% CI: 1.32, 32.05; $P = 0.022$) and PANSS-positive subscale i.e. higher PANSS-positive score was a protective factor for orgasmic dysfunction (OR=0.54; 95% CI: 0.33, 0.89; $P = 0.015$).

Conclusions: The prevalence of sexual dysfunction was relatively high compared to other studies based on Mal-IEEF-15 questionnaire. Malays and patient with education higher than primary level were risk factors for orgasmic dysfunction whereas higher PANSS-positive score was protective against the dysfunction.

Supervisor:

Associate Professor Dr Hasanah Che Ismail

Co-supervisor:

Dr Eni Rahaiza Muhd Ramli

CAREGIVER'S BURDEN IN ELDERLY POST-STROKE PATIENTS WITH DEPRESSION AND COGNITIVE DECLINE ATTENDING FOLLOW-UP AT MEDICAL AND NEUROLOGY CLINICS IN HOSPITAL UMM SARAWAK, KUCHING

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Introduction: Population ageing is a global issue. One of the commonest health problems among the elderly group is stroke. Post-stroke the patient might experience some degree of physical disability, cognitive impairment as well as psychological consequences such as depression. All these consequences may increase the caregiver burden.

Objectives: The present study was done to determine the correlations between post-stroke depression, stroke severity, and cognitive decline with increased caregiver burden.

Methods: This was a cross-sectional study involving 92 patients and caregivers who attended Medical Out-patient

Clinic, Hospital Umm Sarawak from 1st December 2011 to 31st January 2012. The patients and caregivers socio-demographic data was collected and measurement tools included GDS-15, IQCODE-Short, MRS, and CSI were completed. Data was analysed using SPSS version 15.0. Descriptive statistics were shown. Associations and correlations among the variables were tested. Validation study of IQCODE-Short and CSI Malay version was done involving 50 caregivers.

Results: Both IQCODE-Short and CSI in Malay version was found to have good face validity and reliability with Cronbach's alpha 0.94 and 0.79 respectively. The present study found that there were no significant associations between the caregivers' socio-demographic characteristics with caregiver's burden, post-stroke depression, cognitive decline, and stroke severity. There were significant correlations between IQCODE-Short scores and CSI scores as well as MRS scores and CSI scores. However, GDS-15 score was found does not have significant association with CSI scores.

Conclusion: There were significant correlations between cognitive decline and stroke severity with caregiver's burden. There was no significant correlation between depression and caregiver's burden.

Supervisor:

Dr Zahiruddin Othman

IMPACT OF LOWER CALYCEAL ANATOMY AND STONE SIZE ON STONE CLEARANCE AFTER EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY (ESWL) IN ADULTS

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Introduction: Urinary calculus disease occurs around the world with annual incidence in the developed countries of 0.2%. The annual incidence of patients with upper tract urolithiasis undergoing stone surgery was 3.4 per 100000 in Kelantan between year 1984–1986. ESWL is the preferred treatment for renal calculus (> 2 cm). However, the stone clearance rate of lower calyceal calculus was lower (50–70%) compared to stones in upper and middle calyces (70–90%). Our study looked into IVU parameters that may influence the lower pole stone clearance in local adult population. It helps to identify the factors compromising the clinical outcome of ESWL-treated calculi. Hence, urologists can determine the best treatment option for lower pole stones (ESWL or PCNL) after evaluating the IVU.

Objective: This study was conducted to evaluate the impact of radiological anatomy of the lower calyx and stone size on lower pole stone clearance after extracorporeal shock wave lithotripsy (ESWL) in adults.

Methods: We retrospectively evaluated 20 patients with age older than 18, who had ESWL at USM Hospital within 25 months (September 2009 till September 2011) for radio-opaque lower pole calculi with the largest diameter up to 20 mm. Stone size and lower pole anatomy, as defined by the infundibulopelvic angle, infundibular length and width were assessed in pre-ESWL intravenous urogram (IVU). All patients were treated with ESWL and outcome of the stone clearance were reviewed in KUB radiograph performed 1–4 months after the last ESWL.

Result: Only 10 patients (50%) of the study were stone-free after ESWL. Mean stone size and infundibular length were 14.36 mm (SD 3.98) and 27.79 (SD 6.52) respectively. Median infundibulopelvic angle and infundibular width were 33.0° (IqR = 19.75°) and 4.90 mm (IqR = 6.45mm) respectively. No statistically significant difference found in all IVU parameter means or medians between stone-free group and residual stone group. There was also no association of any IVU parameters with stone-free status.

Conclusion: Stone size and lower calyceal anatomy have no significant impact on stone clearance after ESWL. However, further examination of the IVU parameters and further explore for other contributing factors are still warranted.

Supervisor:

Associate Professor Dr Noreen Norfaraheen Lee Abdullah

Co-supervisor:

Dr Mohamed Ashraf Mohamed Daud

CALCIUM SCORING STUDY IN SYMPTOMATIC CARDIAC PATIENTS WITH INCONCLUSIVE DIAGNOSTIC EXERCISE TREADMILL TEST

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Introduction: Chest pain is a common presenting symptom which can be cardiac or non-cardiac origin. Cardiac chest pain is divided into typical and atypical group. Patients with suspected cardiac disease are subjected to exercise treadmill test. Inconclusive results often lead to management difficulty. Calcium score is a cardiac CT examination to assess coronary artery calcification. Presently, there are limited data on calcium score available in Malaysia.

Objective: This study is to evaluate the calcium score and to determine the proportion of typical and atypical symptoms in cardiac patients with inconclusive diagnostic exercise treadmill test. The study aims at determining the association between calcium score and cardiac symptoms (atypical/typical) and risk factors.

Methods: This was a cross-sectional study conducted at Hospital Universiti Sains Malaysia, Kubang Kerian Kelantan

from June 2009 to August 2011. All patients who fulfilled the selection criteria were included. History of patients were evaluated and recorded. Scan performed using 128-slice MDCT scan SOMATOM Definition AS+, Siemens. Image analysed together with a consultant radiologist using Syngo CaScore software application. Each coronary arterial calcification was identified. The calcium score were calculated and recorded. Statistical analysis performed using SPSS version 18. Results were expressed in mean and frequency table. Fisher Exact, Mann-Whitney U and Kruskal Wallis tests were performed as appropriate.

Results: Twenty patients included in the study. They were mostly Malays aged from 31 to 72 years old. Seventy five and 25% of patients had atypical and typical symptoms respectively. Eighty five percent of patients were in the low score risk group (calcium score < 100), 10% were in the intermediate score group (calcium score 100–400) and 5% were in the high score group (calcium score > 400). The commonly involved coronary artery was LAD. There was no statistically significant association or difference in calcium score between type of cardiac symptoms and risk factors.

Conclusion: There was no statistically significant association or difference in calcium score between type of cardiac symptoms and risk factors in cardiac patients with inconclusive diagnostic exercise treadmill test.

Supervisor:

Associate Professor Dr Meera Mohaideen Hj Abdul Kareem

Co-supervisor:

Professor Dato' Dr Zurkurnai Yusuf

NEGATIVE PLAIN CT BRAIN FINDINGS IN NON-TRAUMA PATIENTS AND IT ASSOCIATED FACTORS IN GENERAL HOSPITAL OF PULAU PINANG

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Introduction: Plain CT brain examination is the radiological investigation of choice to investigate patients that were presented with altered neurological status. These CT scan studies would subject patients to the radiation hazard and additional medical cost.

Objectives: The objectives of this study are to determine proportion of the negative plain CT brain finding and to determine association of patients' clinical presentation and rank of requesting doctors with negative plain CT brain finding in patients of 18 years old and above with no history of trauma in General Hospital of Pulau Pinang in the year 2010.

Methods: This was a cross-sectional study conducted from 1st September 2009 to 30th November 2011 by reviewing 225 CTs from emergency department, 175 CTs from non-emergency department and patients' medical records. The CT

images were interpreted by a single radiologist for the finding and the CT scan studies with negative finding were being analyzed for association with referral departments, patients' demography, patients' clinical presentation and the rank of the requesting doctors using descriptive statistic, simple and multiple logistic regression analyses. The data was compiled and analysed using PASW Statistic ver.18 (SPSS Inc.).

Result: The proportion of negative plain CT brain in non-trauma patients in General Hospital of Pulau Pinang was as high as 52.5%. No significance association was found between negative plain CT brain finding with request from emergency department and non-emergency department. Patients without history of hypertension (Adjusted OR 2.69, 95% CI 1.50–4.83, $P < 0.001$), absent of focal neurological deficit (Adjusted OR 3.56, 95% CI 2.18–5.83, $P < 0.001$), having GSC of more than 14/15 (Adjusted OR 4.85, 95% CI 1.96–12.04, $P = 0.01$) and referral case by a house officer (Adjusted OR 3.74, 95% CI 1.63–8.63, $P = 0.02$) were expected to give negative result.

Conclusion: General Hospital of Pulau Pinang has a high as 52.5 % negative plain CT brain finding from total plain CT brain study in non-trauma patients. The result were likely due to absent of protocol and the principle to allow all level of doctors to request plain CT brain study, request that being made to a patient without history of hypertension, absent of focal neurological deficit and patients with GCS of more than 14/15. The revision of current protocol in General Hospital of Pulau Pinang would probably able to decrease the unnecessary plain CT brain study.

Supervisor:

Dr Juhara Haron

Co-supervisor:

Dr Salwah Hashim

MORPHOMETRIC ASSESSMENT OF SPHENOID SINUS IN MALAY POPULATION-BASED ON COMPUTED TOMOGRAPHY

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Introduction: Transsphenoidal route is the choice technique for most of the pituitary lesions. This approach also can be used for other skull base lesions and optic nerve decompression. This procedure is best done by endoscope. Some complications may happen during this procedure which could be due to limited field of view and proximity of the sinus to the adjacent vital structures. Also wide range of normal variations occurs due to variable degree of pneumatization in the sphenoid sinus in which ethnical differences is an important determinant. In this study some of the important anatomical properties of the sphenoid sinus are assessed by

Computed Tomography (CT scan).

Objectives: The morphometric assessment includes anteroposterior diameter, craniocaudal diameter and width with specific definitions, number of the septa within the sinus, the relationship of sphenoid septa with the carotid canals and thickness of the anterior wall of the sphenoid sinus medial to sphenoid ostium.

Methods: Seventy six patients who fulfilled the inclusion criteria were enrolled in this study which was carried out from December 2009 to June 2010. Patients were 18–83 years old, and underwent head and upper cervical CT scan because of head trauma in Hospital University Sains Malaysia. The images were reviewed in bone window.

Results: Mean of oblique anteroposterior length measures 13.71 mm, horizontal anteroposterior length of 13.46 mm, supra-osteal length of 9.49 mm, infra-osteal length of 10.58 mm, mid-ostium length of 5.61 mm, osteal-lateral length of 10.13 mm, width of 29.39 mm. Minimum number of septa in all the cases is at least one, although most of the cases have three septa with the mean 2.49. Maximum number of septa is 8, that is seen in only one case. 60.52% of the cases have at least one septum related to the internal carotid artery prominences on the right or the left side. 14.47% of the cases have relation of a septum to the right ICA prominence, 22.37% to the left side and 23.68% to both sides. Thickness of anterior wall of the sphenoid sinus medial to the ostium is about 2.52 mm. 19.74% of the cases have Onodi cells.

Conclusion: The study supports several other studies' findings which highlighted the importance of the CT scan before transsphenoidal surgery for assessment of the danger points in each case. Professional radiologists should be aware of the techniques of transsphenoidal surgery. They should assess CT images before operation to notify the surgeon about the complication which can be encountered during the procedure because of the normal variations in each case specifically. Surgeons should consider these variations to plan for best route of surgery.

Supervisor:

Dr Win Mar @ Salmah

Co-supervisors:

Associate Professor Dr Hilloil Kanti Pal

Dr Shamim Ahmed Khan

DIAGNOSTIC EFFICACY OF 128-SLICE MULTIDETECTOR COMPUTED TOMOGRAPHY CORONARY ANGIOGRAPHY IN DETECTION OF CORONARY ARTERY STENOSIS

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Introduction: Diagnostic efficacy of 128-slice

multidetector computed tomography coronary angiography in detection of coronary artery stenosis.

Objectives: The aim of this study is to evaluate the diagnostic performance of 128-slice MDCT coronary angiography versus conventional coronary angiography in detection of coronary artery stenosis in patient with coronary artery disease.

Methods: Patients gave written consent. A total of 17 patients; mean age 57.2 years (SD 8.3), who were scheduled for conventional coronary angiography, were included in this study. All patients underwent coronary CT angiography using 128 slice CT scanner. CT images were analyzed by radiologist and who was unaware of the results of invasive conventional coronary angiography. All segments of coronary arteries were included in the evaluation, regardless of their sizes. Segment with 50% or more luminal narrowing, was considered as significant stenosis.

Results: Sensitivity, specificity, positive predictive, negative predictive values and accuracy of coronary CT angiography compared to conventional coronary angiography were assessed and they were 86.7%, 98.2%, 76.5%, 99.1% and 97.5% for segment based assessment; 92.9%, 96.1%, 86.7%, 98% and 95.4% for vessel based assessment; and 87.5%, 88.9%, 87.5%, 88.9% and 88.2% for patient based analysis, respectively.

Conclusion: Data of this study were comparable to previous studies. High negative predictive value can avoid unnecessary conventional coronary angiography with its extra-radiation and possible complication.

Supervisor:

Associate Professor Dr Mohd Ezane Aziz

Co-supervisors:

Associate Professor Dr Zurkurnai Yusuf

A COMPARISON BETWEEN CHITOSAN SPONGE AND ALLEVYN ENHANCED HONEY AS A FORM OF TISSUE TREATMENT IN RATS' WOUND

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Introduction: An experimental study was carried out to compare the efficacy of two naturally available raw materials in Malaysia to enhance and promote wound healing. Chitosan is a polymer derivative from crustacean shell and honey is a sweet derivative of bee product. In this experiment, rats were used as a human substitute as it was unethical to create a full thickness wound in otherwise healthy man.

Objectives: The aim of this study was to identify which material is superior in accelerating wound healing evidenced by wound size and tensile strength.

Methods: A total of 40 Sprague Dawley rats were used

in this experiments. The animals were wounded with a full thickness skin excision in animal house HUSM (LARU). In one arm of the study, twenty animals received chitosan as a dressing and another twenty rats on the other arm received honey. Wound contracture and tensile strength were recorded. Gross appearance of the wounds were also noted.

Results: Data collected were analyzed using independent *t* test. Demographically, no significant difference was noted in term of wound size ($P > 0.05$). Physically, a remarkable wound strength was noted in the chitosan group in comparison with honey ($P < 0.05$). Mean average of wound strength was recorded to be double that of the honey group. No wound infection was noted in this experiment and all animals were euthanatized on day seven.

Conclusion: This experiment concluded that chitosan is a reliable material in promoting quality wound healing. It is a better dressing to promote wound healing and tensile strength in a clean wound but is comparable to honey in promoting wound contracture.

Supervisor:

Professor Dr Ahmad Sukari bin Abdul Halim

THE INFLUENCE OF TOPICALLY APPLIED TUALANG HONEY GEL ON ANASTOMOTIC HEALING OF LARGE BOWEL IN RATS MODEL

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Introduction: Anastomotic leak from colon surgery remains a clinical challenge for the colorectal surgeon. Although there have been improvements in pre-operative preparation and advances in surgical technique, leakage from colonic anastomoses continues to be a significant cause of morbidity and mortality in patient undergoing colonic surgery. The aim of this study is to investigate the effects of topically applied Tualang Honey gel on wound healing in experimental colon anastomoses model.

Methods: Twenty four Wistar Kiyoto rats weighing 300 to 350 g were subjected to the study. They were divided into two groups and had full thickness large bowel resection and anastomosis. In group I, anastomosis group, received no treatment (GI, $n = 12$). For the rats in group II, colonic anastomosis was done with topically applied Tualang honey gel at the site of anastomosis, (GII, $n = 12$). They were fed with standard rats chow with free access to water pre and post-operation. All rats were sacrificed at day seven after operation. Adhesion score were assessed after abdominal wound was opened, and anastomotic bursting pressures were measured after resection of anastomotic segment. Tissue hydroxyproline level was analysed by spectrophotometer at 560 nm. Histopathological examination on the anastomosis

line was performed with light microscopes.

Results: The adhesion was noted to be less in Tualang Honey gel application group and was statistically significant. The bursting pressure, tissue hydroxyproline levels, inflammatory cells count, and fibroblast count were statistically higher in Tualang honey group than the control group but neovascularization formation was not statistically significant. However, in overall count of neovascularization in the Tualang honey gel group were more compared to the control group.

Conclusion: Application of Tualang honey gel at the anastomosis site of large bowel surgery can reduce the adhesion, increase the bursting pressure, reduce the inflammatory process and increase fibroblast formation. Therefore it can accelerate healing of large bowel anastomosis following surgical resection and reduce adhesion.

Supervisor:

Dr Maya Mazuwin Yahya

Co-supervisors:

Associate Prof Dr Siti Amrah Sulaiman

Dr Sharifah Emilia Tuan Shariff

RANDOMIZE CONTROL STUDY USING VITAMIN D IN PREVENTING POST-TOTAL THYROIDECTOMY TRANSIENT HYPOCALCEMIA

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Introduction: Total thyroidectomy is a common surgical procedure for thyroid disease. The common complication of thyroid operation is bleeding, injury to the superior and recurrent laryngeal nerve, thyroid storm, hypothyroidism, transient hypocalcemia, and infection. With the recent advanced technology and surgical skill, thyroid operation is very safe and most can be done as a day care procedure. However, risk of transient hypocalcemia still remains high. Without doubt, this problem cause discomfort to the patient and also prolonged hospital stay.

Objective: The aim of our open label randomized control study was to determine the incidence of transient hypocalcemia developing post total thyroidectomy in Malaysia and the benefit of pre-operative treatment using oral vitamin D in total thyroidectomy.

Methods: This is a randomized control study which recruits a total of 74 patients from Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab II. The study was carried out over one year duration since 5th May 2009 until 30th April 2010. Seventy four patients underwent total thyroidectomy were randomized into two groups. Study group: 37 patients treated with oral vitamin D (calcitriol) 1.5 ug/day for 2 days duration before operation followed by

1.0 ug/day plus oral calcium lactate 1800 mg/day for 7 days after operation. Control group: 37 patients did not receive oral Vitamin D. All the patient were assessed either clinically or biochemically for hypocalcemia. All data were entered and analysed using SPSS software version 12.0. Studied parameters analysed using frequency and percentage, univariate, and multivariate logistic regression and repeated measure ancova.

Result: There was not significant difference between the study and control group in terms of demographic distribution of age, sex, diagnosis, surgeon, operating duration, parathyroid gland autotransplant, and baseline level of serum calcium, phosphate, and intact PTH. The incidence of post-total thyroidectomy transient hypocalcemia in the study group is about 16.7% compared with control group of 75%. Among the cases, 50% in study group and 64.3% in control group are symptomatic. The incidence of permanent hypoparathyroidism is 2.7%. There was significant difference in term of incidence of asymptomatic hypocalcemia and symptomatic hypocalcemia between these two groups. There was also significant difference between control and study group with regards to the trend of post-operative serum calcium changes. However, there was no significant difference in the risk of developing permanent hypoparathyroidism. The post-operative stay is significantly longer in control group, 4.59 days compared with study group, 3.92 days.

Conclusion: The administration of oral vitamin D had significantly reduced the incidence of transient hypocalcemia post total thyroidectomy.

Supervisor:

Dr Zaidi Zakaria

Co-supervisors:

Dr Zainal Mahmood

Dr Imisairi Haji Abdul Hadi

HORMONE RECEPTOR STATUS OF BREAST CANCERS AND OTHER PROGNOSTIC FACTORS IN TWO STUDY CENTRES

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Introduction: In Malaysia, breast cancer is the commonest cancer in all ethnic. Breast cancer in Malaysian women occurs in the younger age group compared with Western countries and the fourth most common cause of death among all cancers in Malaysia. Stage at presentation here is more advanced with tumour size being much larger and with either locally advanced or metastatic breast cancer. There was a higher proportion of hormone receptor-negative with higher grade tumour in Asian patients compared to Western countries raises questions whether a different pattern of breast cancer is seen in Asian.

Objectives: The aim of this study is to evaluate the age at presentation and hormone receptor status of breast cancers and its association with other established prognostic factors for example tumour size, lymph node status, and tumour grade.

Methods: This is a study of retrospective record review of 160 patients diagnosed from 1st January 2003 to 31st December 2008. List of name of patients have been obtained from cancer registry of Pathology Department in Hospital University Sains of Malaysia (HUSM) and Hospital Raja Perempuan Zainab II (HRPZ II). The data were obtained from medical records. Data were entered into data collection protocol and were analyzed using SPSS software version 12.0.

Results: This study identifies the association between tumour size and lymph node involvement and staging of breast cancer at presentation. Majority breast cancer patients in this study were from 40 to 49 years old. Minority of patients had tumour size 2 cm and below at presentation. The commonest stage at presentation of breast cancer was at stage II and grade III. Only 47.8% were ER (+) and 51.5% were PR (+) respectively.

Conclusion: This study cannot prove of association between young age and receptor status with advanced stage of breast cancer. Majority of patients presented with large size tumour with poorly differentiated histology, estrogen receptor-negative, and lymph node metastases.

Supervisor:
Dr Mohd Ridzuan Abdul Samad
Co-supervisor:
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LAPAROSCOPIC CHOLECYSTECTOMY CONVERSION RATE AND ASSOCIATED FACTORS

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Introduction: Gall stone has been found in the gallbladders of Egyptian mummies dating back to 1000 b.c. The incidence of gall stones varies throughout the world as a result of ethnic, dietary and poorly understood demographic factors. Since the introduction of laparoscopic cholecystectomy in late 1980's, it rapidly and almost completely replaced the open method. Advantages of laparoscopic cholecystectomy over traditional open cholecystectomy include reduced post-operative recovery time, shorter hospitalization, reduced pain, improved cosmesis, and rapid return to normal activities. However, not all cases can be completed laparoscopically and conversion to open cholecystectomy is then required. Conversion rates for both acute and chronic cholecystitis have been reported in many series and range from 2 to 20% with an average of 5%. The most common reasons of conversion are

inability to delineate the anatomy secondary to adhesions or inflammation, unexpected operative findings, and iatrogenic injuries.

Objective: To identify risk factor/s for conversion to open cholecystectomy.

Methods: A retrospective records review was carried out. Records of all patients who underwent laparoscopic cholecystectomy from January 2008 till December 2009 in Hospital Raja Perempuan Zainab II (HRPZ II), Kota Bharu, Kelantan were reviewed and all risk factors were documented. Risks factors for conversion were analysed.

Results: Of 82 records reviewed, 11 (13.4%) require conversion to open cholecystectomy. Age, gender, comorbidity, and history of prior abdominal surgery were not statistically significant to the conversion rate. Fever, pancreatitis, and ultrasound findings of thickened gallbladder wall or pericholecystic fluid collection were not associated with significant risk of conversion. There were significant associations between acute cholecystitis (P value = 0.06, adjusted OR = 13.365) and stone in the common bile duct (P value = 0.07, adjusted OR = 9.278) with conversion to open cholecystectomy.

Conclusion: Acute cholecystitis and presence of stone in the common bile duct were associated with higher incidence of conversion to open cholecystectomy.

Supervisor:
Dr Zainal bin Mahmood
Co-supervisor:
Dr Azhan bin Yusof

PROGNOSTIC FACTORS OF RELAPSE TIME AMONG PATIENTS WITH ADVANCED PROSTATE CANCER IN HOSPITAL UNIVERSITY SAINS MALAYSIA FROM 2000 TO 2009

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Introduction: Androgen deprivation therapy (ADT) is a standard modality of therapy for patients with advanced prostate cancer. Yet the patients with advanced prostate cancer will eventually relapse and develop resistant disease. Previously reported that the median relapse time s 12 to 33 months. Furthermore, to our knowledge the prognostic factors to the relapse of the advanced prostate cancer not been previously reported. For this reason this study was conducted to assess relapse time and the clinical variables that influence relapse time in patients with hormone refractory prostate cancer.

Objective: To determine the median relapse time of advanced prostate cancer, and the factors associated with it among the advanced prostate cancer patients.

Method: A total of 97 patients with resistant advanced prostate cancer in HUSM from 2000 to 2009 were retrospectively reviewed. The data was collected from the medical record and the patient's folders were traced and data collected and analyzed using SPSS 18.0 software.

Results: After multivariable analysis, being between 61 to 75 years old ($P = 0.004$), pre-treatment PSA levels of more than 100 ng/mL ($P < 0.0001$), or having any of the grades of the gleason-score ($P = 0.034$), or being presented with LUTS and metastatic symptoms ($P = 0.019$), or having a suggestive DRE ($P = 0.037$), or positive X-rays for bone metastasis ($P = 0.006$), and showed improvement of the urinary symptoms ($P = 0.014$) were adjusted significant associated factors of the relapse time of the advanced prostate cancer.

Conclusion: The median relapse time was 12 months. Age at the time of diagnosis, presentation with LUTS and metastatic symptoms, suggestive Digital Rectal Examination, Prostate Specific Antigen at the time of presentation, the presence of bone metastasis on X-rays, Prostate tumour Grade (Gleason Score), and improvement of the urinary symptoms were found statistically significant.

Supervisor:

Dr Allah Ubhayo Unar

Co-supervisor:

Dr Mohammed Ashraf Mohamed Daud

A PRELIMINARY (PILOT) STUDY ON CYTOCHROME P450 2D6 POLYMORPHISM IN CHRONIC PAIN

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Introduction: There were studies done on cytochrome P450 2D6 polymorphism in many diseases. However there is no study investigating its polymorphism in chronic pain patients. Thus, this pilot study is to get baseline data for further larger study.

Objectives: To investigate the genetic polymorphism pattern of cytochrome P450 2D6 among chronic pain patient.

Methods: After ethical committee approval, a pilot, descriptive cross-sectional study was conducted on 40 chronic pain patients. They were divided into cancer and non-cancer groups. About 5 mL of venous blood was sampled from each patient and sent for genotyping of CYP 2D6 polymorphism. Their demographic data and VAS score were recorded.

Result: We found that the commonest CYP2D6 genotype was CYP2D6 *1/*10 (35%). The majority of them were EM (67.5%) and 22.5% were IM but none was PM. The nociceptive pain was more common type of pain among cancer pain patients.

Conclusion: The genetic polymorphism patterns of CYP2D6 were highly polymorphic among chronic pain patient

and the dose modification of analgesics drugs may influence the therapeutic outcome and satisfaction.

Supervisor:

Associate Professor Dr Nizar Abd. Jalil

Co-supervisors:

Professor Rusli Ismail

Cik Nurfadhlin Musa

Dr Wan Nazirah Wan Yusuf

Dr Muhammad Irfan Abdul Jalal

MAGNESIUM AND PHOSPHATE LEVEL DURING ADMISSION IN SEPSIS PATIENTS IN RELATION WITH MORTALITY AND MORBIDITY IN INTENSIVE CARE UNIT HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Magnesium and phosphate are electrolytes that important for body homeostasis and maintains normal body function. Hypomagnesaemia and hypophosphataemia are frequent phenomenon in hospitalized patient and have a higher prevalence in intensive care. The focus of this study was to determine the prevalence in these both electrolytes in sepsis patient during ICU admission and its relation to mortality and morbidity.

Objectives: The main aim of this study is to determine the level of magnesium and phosphate during ICU admission in sepsis patient admitted to Intensive Care Unit and its relation with mortality and morbidity.

Methods: This study was a retrospective study with chart review from 108 sepsis adult patients admitted to Intensive Care Unit HUSM from January 2010 to July 2011. The baseline characteristics and ICU outcomes of all patients were retrospectively collected by reviewing their medical record. Patients characteristic including age, sex, APACHE II score, primary reason for ICU, magnesium, and phosphate level during admission, ICU stay and last day in ICU were recorded. Total day required for mechanical ventilation, length of ICU stay, ICU mortality and recovery were recorded.

Result: There were 52.3% (34/65) ICU mortality from group hypomagnesaemia, 32.3 % (21/65) normal magnesium and 15.4% (10/65) hypermagnesaemia ($P < 0.05$). There was statistically significant that 53.8 % (21/39) from patients who were discharge home (recovery) have normal magnesium level compare to 35.9% (14/39) hypomagnesaemia. Hypomagnesaemia group required longer ventilatory support with mean 8.06 days (SD 7.94) than normal magnesium level group 5.79 days (SD 6.089). The length of ICU stay was longer in hypomagnesaemia group that is 8.88 ± 7.86 days compare with normal magnesium group 7.00 days (SD 6.863)

($P > 0.05$). We found that 43.6 % (17/39) from patients who were discharge home (recovery) have normal phosphate level compare to 33.3% (13/39) hypophosphataemia ($P > 0.05$). We also found for hypophosphataemia group required same duration of ventilator support with mean 7.44 days (SD 6.66) with normal phosphate level group 7.47 days (SD 8.70). The length of ICU stay is similar in hypophosphataemia group that was 8.96 days (SD 6.41) and normal phosphate group 8.49 days (SD 8.64).

Conclusion: The study was able to determine that the hypomagnesaemia during admission are associated with higher mortality rate and cause more morbidity in term of prolonged ventilatory support and increase length of ICU stay. However hypophosphataemia did not increase mortality and morbidity.

Supervisor:

Professor Dr Nik Abdullah Nik Mohamad

Co-supervisor:

Associate Professor Dr Mahamarowi Omar

IMMUNONUTRITION: COMPARISON BETWEEN PNEUMONIC PATIENTS RECEIVING GLUTAMINE SUPPLEMENTED ENTERAL FEEDING AND STANDARD ENTERAL FEEDING IN INTENSIVE CARE UNIT, HOSPITAL UNIVERSITI SAINS MALAYSIA

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MMed (Anesthesiology)

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Introduction: Malnutrition is defined as under nourishments which is deficiency in energy, protein, or any other specific nutrient in measurable body functions linked to poor patient progress. Early initiation of nutrition supplemented together with Immunonutritions such as glutamine is vital and as part of management in overcoming malnourishment and subsequently improve the outcome of critically ill patient in ICU. As proven in the previous studies, its demonstrated that parenteral glutamine dipeptides showed a significant reduction in infectious morbidity and length of hospital stay.

Objectives: The general aim of this study was to evaluate the beneficial effect of glutamine supplemented enteral feeding in comparison with standard enteral feeding. The specific objectives were to compare the improvement of Simplified Acute Physiological score II (SAPs II), septic parameters (TWC, CRP, CD4/ CD8 ratio), PaO₂/ FiO₂ ratio, blood glucose level and length of ICU stays between these two groups.

Methods: This was a prospective randomized controlled trial. A total of 50 patients who had fulfill the inclusion criteria were randomly allocated into two groups either receiving glutamine supplemented enteral feeding or standard enteral

feeding (control group) for five consecutives days in ICU, HUSM. Each patient was first scored by using SAPs II within 24 hours of ICU admission. Then, enteral feeding was started and was continuously delivered by a pump for 24 hours. In this study, the comparison were made through inter and intra groups level for pre-enteral feeding (baseline, day 0) and post-enteral feeding (at day 6) of ventilator setting (PaO₂/ FiO₂ ratio), septic parameters (total white cells, C-Reactive protein) and blood glucose level. Apart from that, blood culture and endotracheal culture were also taken and recorded as day 0 before antibiotics were initiated. SAPs II also repeated at day 6 after completion of 5 days duration of enteral feeding. The outcome were also observed for the length of ICU stays and their survival status.

Result: Base on the data obtained from this study, on the day of ICU admission, SAPs II were almost similar for both groups but there was an obvious difference at day 6 (post enteral feeding) for inter group comparison. However the SAPs II improvement was statistically significant when compared in glutamine group between on the day of ICU admission and day 6 ($P = 0.002$). Inter groups level analysis, of septic parameters, showed no significant difference that can be seen but there was improvement statistically in TWC count and CRP level ($P = 0.002$) within glutamine group and CRP level ($P = 0.014$) for the control group. The CD4/ CD8 ratio did not show any significant when analyzed for inter and intra groups. For the ventilator parameter, the PaO₂/ FiO₂ ratio on day 6 had shown significant changes ($P = 0.034$) in inter group level analysis. Further analysis was done whereby at day 6 post-enteral feeding, more than 50% of the patients in glutamine group were extubated compared with control group. The blood glucose level in the inter groups level analysis, had shown significant difference after day 6 enteral feeding ($P = 0.029$), whereas for intra group level analysis, only glutamine group had significant improvement statistically ($P = 0.001$).

Conclusion: In conclusion, giving glutamine supplemented enteral feeding for ventilated pneumonic patients have shown a significant improvement in terms of SAPs II, septic parameters (TWC, CRP and CD4/CD8 ratio) and survival status. Nevertheless, the length of ICU stay remains the same.

Supervisor:

Dr Rhendra Hardy Mohd Zaini

Co-supervisor:

Dr Suneta Sulaiman

A RETROSPECTIVE COHORT STUDY OF COMPLIANCE WITH THE SURVIVING SEPSIS CAMPAIGN RESUSCITATION BUNDLE IN INTENSIVE CARE UNIT HOSPITAL UNIVERSITI SAINS MALAYSIA

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MMed (Anaesthesiology)

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Introduction: Sepsis is common and a major cause of death in intensive-care units worldwide, with mortality rates that range from 20% for sepsis, through 40% for severe sepsis, to over 60% for septic shock. It is more dangerous in elderly, immunocompromised, and critically ill patients. It occurs in 1–2% of all hospitalizations and accounts for as much as 25% of ICU bed utilization.

Objectives: To determine the compliance of Intensive Care Unit Hospital Universiti Sains Malaysia with the Surviving Sepsis Campaign to all and each elements of resuscitation bundle within six hours of diagnosis of severe sepsis and septic shock. Secondary objectives were to evaluate the impact of compliance with the Surviving Sepsis Campaign on ICU length of stay and mortality of severe sepsis or septic shock patients.

Methods: A retrospective cohort study of compliance with the Surviving Sepsis Campaign Resuscitation Bundle involving 114 adult patients with severe sepsis or septic shock admitted to ICU Hospital Universiti Sains Malaysia in the periods between September 2009 till September 2011.

Results: Overall compliance to the all nine elements of resuscitation bundle was only 9% (10/114). Compliance to blood culture before antibiotics was significantly associated with ICU mortality ($P = 0.019$). There was higher proportion of alive patient than dead in blood culture compliance. Achievement of Surviving Sepsis Campaign six hours resuscitation bundle target and ICU length of stay; less or more than 10 days showed compliance to CVP ≥ 8 –12 mmHg and ScVO₂ $\geq 70\%$ or SVO₂ $\geq 65\%$ were significantly associated with ICU length of stay with $P = 0.005$ and $P = 0.024$ respectively. The compliance to CVP ≥ 8 –12 mmHg has higher proportion of length of stay < 10 days. The compliance to ScVO₂ $\geq 70\%$ is similar proportion with length of stay < 10 days and length of stay > 10 days. Overall compliance to six hours resuscitation bundle was significantly associated with length of stay. Location at diagnosis and main unit incharged were significantly associated with overall compliance.

Conclusions: Compliance to all Surviving Sepsis Campaign 6 hours resuscitation bundle was generally too low. Overall compliance to Surviving Sepsis Campaign six hours resuscitation bundle was important to improve length of stay in ICU. Only blood culture, CVP 8–12 mmHg and ScVO₂ ≥ 70 mmHg were independently associated with outcome.

Supervisor:

Associate Professor Dr Mahamarowi Omar

PREVALANCE AND ASSOCIATES FACTOR OF POST-TRAUMATIC HYDROCEPHALUS AMONG HEAD INJURY PATIENT IN HOSPITAL SULTANAH AMINAH JOHOR BAHRU, JOHOR

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MMed (Neurosurgery)

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Introduction: Post-traumatic hydrocephalus is one of complications in traumatic brain injury. It is always neglected due to rarity. It is an important complication that the neurosurgeon or rehabilitation specialist should consider. The main aim of the study was to determine the prevalence of post-traumatic ventriculomegaly (Evans' Index > 0.30) in all head injury patients in Hospital Sultanah Aminah Johor Bahru and clinical risk associated with post-traumatic hydrocephalus.

Methods: The study was a retrospective cohort study in nature whereby the respondents involved patients who were diagnosed and treated for post-traumatic hydrocephalus in Hospital Sultanah Aminah for the periods of four years (2008–2011). The computer database system employed by Hospital Sultanah Aminah in the operation theatre (OT) called COTDS. By using Microsoft Office Excel, the patients' data that had undergone neurosurgical procedure in the OT were recorded. The patients who fulfilled the all the criteria were identified as the sample of this study. For control group, similar procedure was adopted whereby cranioplasty was typed in the search box. We then select the case and those fulfilled criteria for post-traumatic ventriculomegaly were taken into the study as control group. Data from the case notes and films were studied and collected using a standardized questionnaire. The data was analysed by using SPSS version 15.0. Fisher exact test was used to assess the significance of association.

Results: The prevalence of post-traumatic hydrocephalus over a period of four years (January 2007 till December 2011) was 22 out of 3684 patients of head trauma. The mean age developing post-traumatic hydrocephalus is 29 with the range from 15 to 58 years old. Malays comprised of 63.6% out of the total number of patients; 13.6% of Chinese and Indians; and 9.1% in others race group. Fifty per cents of post-traumatic hydrocephalus patient in our study had severe brain injury. There are 77.3% of patient in our study had alleged motor vehicle accident as a cause of trauma. The remaining, 13.6% had fall from height and 4.5% each for industrial accident and assaulted. Nearly, 63.3% of post-traumatic hydrocephalus patients in our study underwent decompressive craniectomy. Fifteen patients (68.2%) had an onset of hydrocephalus more than 21 days in our study. There are 5 patients (22.7%) had an onset in between 8–20 days. Only 2 patient developed hydrocephalus less than 7 days. In our study 15.9% of patient who developed post-traumatic hydrocephalus had stayed in ICU > 3 weeks duration. There is an association between duration of stay and development of hydrocephalus ($P < 0.001$) in our study. There are 14 (31.8%) of patient, who had interhemispheric subdural hygroma on repeated scan, developed post-traumatic hydrocephalus, 17 (38.6%) of patient who had traumatic subarachnoid haemorrhage developed post-traumatic hydrocephalus,

18 (40.9%) of patient who developed post-traumatic hydrocephalus has intraventricular haemorrhage on initial CT brain and 20 (45.5%) of patient developed post-traumatic hydrocephalus in our study has base of skull fracture. However, subarachnoid haemorrhage, intraventricular hemorrhage, base of skull fracture and subdural hygroma are not associated with post-traumatic hydrocephalus ($P > 0.05$). There were 8 patients out of 14 cases who had internal shunts i.e. ventriculoperitoneal shunts in our study had complications. However, there is no association between internal shunts insertion and complications ($P > 0.110$) in post-traumatic hydrocephalus patients in our study.

Conclusion: In our study the incidence of post-traumatic hydrocephalus is 0.6% and the prevalence was 22 in 3684. Decompressive craniectomy and initial CT scan findings showing traumatic subarachnoid haemorrhage, intraventricular haemorrhage, and base of skull fracture or interhemispheric subdural hygroma may represent as predictive indicator in developing post-traumatic hydrocephalus.

Supervisor:

Dr Johari Siregar Adnan

Co-supervisor:

Dr Noor Azman Abdul Rahman

PROSPECTIVE COHORT STUDY ON THE IMPACT OF TELENEUROSURGERY IN REDUCING UNNECESSARY TRANSFER OF PATIENTS

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Introduction: Telemedicine in neurosurgery or teleneurosurgery has been widely used for transmission of clinical data and images throughout the country since its implementation in 2006. The impact is a reduction of number of patients that need to be reviewed in the level III hospitals and an increment in the number of patients that are kept in level II hospitals for observation by the primary team. This translates to reduction of unnecessary transfer of patients and subsequently cost benefits for patients and medical providers. Objectives: The main aim of this study is to determine the amount of reduction in unnecessary transfer by the implementation of teleneurosurgery in the management of referrals to neurosurgical department in HSAJB.

Methods: This prospective cohort study has been conducted in HSAJB, Johor in four months from November 2011 to February 2012. The subjects are all patients that are referred to HSAJB that follows the inclusion and exclusion criteria. A total of 349 subjects are included with 12 subjects excluded. The subjects are followed up from the time of referral until three months post-referrals. Related data included in the

observation includes the decision before and after reviewing the radiological images on teleconsultation website with clinical data available at all times. Other data included are based on demographic data available and the result of follow up at three months.

Results: There is significant reduction in the number of inter-hospital transfer. 37% of transfer is avoided and patients are best kept in their original hospitals. However, there are additional findings in which there are 20.1% of patients that thought does not required transfer based on clinical data alone, would have to be transferred when the clinical data and images are reviewed. This translates to increment of 20.1% that need to be observed in neurosurgical centre. Without the images, these 20.1% patients might be observed in the referral hospitals with higher risk of deterioration. Other factors that are related to transfer decision apart from images include Glasgow Coma Scale (GCS) and diagnosis. When clinical data is reviewed alone, the GCS is the significantly associated with transfer and when clinical data and images are reviewed together, the GCS and diagnosis are significantly associated with transfer decision. On multi-factorial analysis, more of mild head injury being transferred in for observation in neurosurgical unit after images and clinical data reviewed which correlates to an increment from 1.85% to 3.9%. Another finding is that the risk of patients transferred for trauma is reduced from 1.85% to 0.519% after images and clinical data reviewed.

Conclusions: Teleneurosurgery is beneficial in the management of referrals from level II hospitals. The inter-hospital transfer is reduced significantly and increased in the number of patients that need to be observed in neurosurgery unit for the risk of potential deterioration.

Supervisor:

Associate Professor Zamzuri Idris

Co-supervisor:

Dr Johari Siregar Adnan

AN ASSESSMENT OF OPTIC NERVE PARAMETERS IN MALAY NORMAL TENSION GLAUCOMA AND PRIMARY OPEN ANGLE GLAUCOMA PATIENTS

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Introduction: The recent availability of retinal imaging device plays an important role to differentiate the appearance of optic nerve in normal tension glaucoma (NTG) and primary open angle glaucoma (POAG) patients. There no published literature of these two group of glaucoma in patients of Malay ethnicity, or even those who are living in South East Asian areas.

Objectives: To compare optic nerve head parameters

among Malay NTG and POAG patients using HRT III analysis.

Methods: A comparative cross-sectional study was carried out from November 2010 till February 2012 in two hospitals with availability of glaucoma service. A total of 154 eyes of 154 Malay patients were included in this study; 32 NTG patients, 45 POAG patients, and 77 control group. All participants underwent a thorough ocular examination including visual acuity, subjective refraction, anterior segment and fundus examinations, Humphrey visual field 24-2, intraocular pressure measurement, gonioscopy examination, and fundus photography. An assessment of optic nerve head parameters was conducted using HRT III by an identified masked investigator in each hospital. Comparison of these two glaucoma groups was further analyzed according to the appearance on cup disc ratio on clinical assessment and AGIS scoring system.

Results: Both glaucoma groups had notably larger discs, larger cupping, smaller retinal rims area and thinner nerve fiber layers when compared to the control group ($P < 0.05$). NTG patients revealed larger disc and cup areas when compared to the POAG patients (the mean for disc area was 2.65 (SD 0.41) mm² for NTG group, and 2.40 (SD 0.36) mm² in POAG group, $P = 0.006$; the mean cup area of NTG patients was 1.54 (SD 0.43) mm² and 1.32 (SD 0.40) mm² in POAG group, $P = 0.027$). This observation was also parallel when they were further analyzed according to the severity of glaucoma in both studied groups.

Conclusion: The optic nerve head parameters are significantly different in Malay NTG and POAG patients when compared to healthy individuals. Disc and cup areas are significantly larger in Malay NTG compared to POAG patients, while the other parameters are comparable in both groups.

Supervisor:

Associate Professor Shatriah Ismail

Co-supervisor:

Dato' Dr Ahmad Mt Saad

A STUDY ON THE EFFECT OF MACROVASCULAR ARTERIAL STIFFNESS IN AGE RELATED MACULAR DEGENERATION

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Introduction: Age related macular degeneration is the main cause of blindness in elderly patients not only in the Western World, but is also increasing in the Asian population. There are many studies being conducted to find prevention for this disease which is increasing in the world population. Age related macular degeneration is a disease which affects the aging population and thus there might be a common mechanism which might be related to arterial stiffness. Most

of the epidemiological studies done showed that ARMD was detected in people of over 65 years.

Objectives: To compare the mean macrovascular arterial stiffness in ARMD and controls and to compare the mean macrovascular arterial stiffness in Dry and Wet ARMD.

Methods: One hundred and twenty patients with age related macular degeneration were selected for this study. Sixty patients were ARMD patients out of which 30 were wet ARMD and 30 were dry ARMD. All patients were subjected to arterial stiffness measurement using a sphygmocor machine. The parameters for the arterial measurement were pulse wave analysis and pulse wave velocity.

Results: Mean age group was 68.41 years (SD 8.0) in ARMD and 69.0 years (SD 9.6) in control group. Pulse wave analysis was 23.50 (SD 8.48) % in patients with ARMD and 22.34 (SD 8.20) % in the controls. There was no significant difference of PWA between the two groups ($P > 0.05$) indicating no difference in arterial stiffness in ARMD and control group. Mean Pulse wave velocity was 13.95 (SD 3.47) m/s in ARMD and 14.28 (SD 3.77) m/s in the control group with a $P > 0.05$ indicating no difference in arterial stiffness between the two groups. There was no significant difference in the pulse wave analysis and pulse wave velocity between the Dry and Wet type of ARMD ($P > 0.05$).

Conclusion: In this study, there is no significant difference in mean macrovascular arterial stiffness between ARMD and control and there is no significant difference in mean macrovascular arterial stiffness between the dry and wet ARMD.

Supervisor:

Associate Professor Dr Raja Azmi Mohd Noor

Co-supervisor:

Associate Professor Dr Aida Hanum Ghulam Rasool

MACULAR THICKNESS MEASUREMENT POST-PHACOEMULSIFICATION SURGERY USING HEIDELBERG RETINAL TOMOGRAPH III

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Introduction: Nowadays, phacoemulsification surgery has become a common outpatient procedure in many places. The improved surgical techniques have promoted it to become one of the safest and most successful ophthalmic procedures. The advent of phacoemulsification signified a quantum leap for ophthalmologists worldwide. However, even this modern day cataract surgery is known to elicit postoperative or pseudophakic macular oedema owing to its traumatic effect. There is no reported data on the changes in the macular thickness post uncomplicated phacoemulsification surgery using the HRT III so far.

Objectives: To determine and to compare the macular thickness at 1 week and 6 weeks post phacoemulsification surgery using HRT III.

Methods: Patients who were diagnosed as having senile cataract and had undergone uncomplicated phacoemulsification surgery in HUSM were selected. Patients who met the inclusion and exclusion criteria were subjected to examination using the HRT III to acquire the macular thickness measurements at one week and six weeks post-phacoemulsification surgery. Only those with reliable macular images were recruited. Full ocular and systemic examination was performed on all patients. For the patients who are diabetic, their HbA1c levels (taken within the last three months of their surgery) were obtained from their clinical record.

Results: A total of 30 participants who had undergone uncomplicated phacoemulsification surgery were included. Their mean age group was 65.10 years (SD 7.7) with no gender variation seen. Nearly equal number of participants with and without diabetes was included. However, only those without any diabetic retinopathy or maculopathy were selected. There was no significant difference in the macular thickness between week one and week six post-phacoemulsification surgery. There was also no significant difference in the changes in the macular thickness between gender, between the diabetic and non-diabetic participants and between diabetics with good and poor control. There was an inverse correlation of the macular thickness with age which was only statistically significant in the superior outer quadrant - r3(S).

Conclusion: The mean macular thickness in the central or foveal zone at one week and six weeks post-phacoemulsification was 281.97 μm and 306.33 μm respectively. In our study, there was no significant difference in the macular thickness following uncomplicated phacoemulsification surgery based on the 9-zones in the central macula.

Supervisor:
Associate Professor Dr Mohtar Ibrahim

DETECTION OF EPSTEIN-BARR VIRUS IN PRIMARY PTERYGIUM

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Introduction: Pterygium is a common ocular surface lesion, however its pathogenesis remains unclear. Recent evidences suggested that pterygium is active and proliferative, resembling a benign neoplastic lesion. Ultraviolet light is an important risk factor, but other cofactors, such as oncogenic virus, may potentially play a role in its multistep development.

Methods: Fifty primary pterygia were obtained for investigation. Fifty morphologically normal conjunctiva were

used as control. Clinical histories were recorded, followed by ocular examination for each patient, prior to excision of pterygium. Epstein-Barr virus detection was accomplished by polymerase chain reaction amplification of viral sequences. Results were statistically analysed.

Results: Epstein-Barr virus was detected in 5 (10%) primary pterygia and 3 (6%) conjunctival control. There was no statistical significant association between primary pterygium and the presence of Epstein-Barr virus. Instead, a positive correlation between primary pterygium, family history of pterygium and outdoor occupation was found.

Conclusion: The results of this study indicate that Epstein-Barr virus is not associated with primary pterygium. However, limited presence of the virus in both primary pterygium and normal conjunctiva may have clinical implication on ocular surface. Meanwhile, hereditary factor and outdoor occupation with long term sunlight exposure were identified as risk factors for primary pterygium in our study population.

Supervisor:
Associate Professor Dr Mohtar Ibrahim
Co-supervisors:
Dr Siti Raihan Ishak:
Dr Chan Yean Yean
Associate Professor Dr Fauziah Mohammad Idris

EVALUATION OF VISUAL FUNCTION, MACULAR THICKNESS AND QUALITY OF LIFE PRE- AND POST-FOCAL LASER PHOTOCOAGULATION IN DIABETIC MACULAR OEDEMA

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Introduction: Diabetic macular oedema (DME) is one of the main causes of visual loss in diabetic patients. The mainstay of treatment in all types of diabetic maculopathy is focal laser photocoagulation. The measurement of visual function and vision related quality of life would assess the improvement and outcome of the intervention.

Objective: The objective of this study is to compare the changes in visual acuity, contrast sensitivity, macular thickness, and quality of life scoring in pre-and post-focal laser photocoagulation between mild, moderate and severe diabetic macular oedema.

Methods: A total of 61 patients (111 eyes) with diabetic macular oedema were categorized into mild, moderate, and severe group. All of patients underwent focal or grid laser photocoagulation. The visual acuity, contrast sensitivity, macular thickness and quality of life scoring were the measurements done at baseline and three months post- focal or grid laser photocoagulation.

Results: At three months post-focal laser photocoagulation, the mean visual acuity in each group of DME was significantly improved in moderate ($P < 0.001$) and severe DME ($P = 0.047$). There was no significant changes of mean contrast sensitivity in each group of DME ($P > 0.05$). The mean macular thickness in each group of DME was significantly reduced in mild DME ($P < 0.001$) and moderate DME ($P = 0.049$). The mean QOL score in each group of DME significantly increased in moderate ($P = 0.002$) and severe DME ($P = 0.038$). There was no significant different of the change in visual acuity ($P = 0.354$), contrast sensitivity (3 cycle/degree: $P = 0.693$, 6 cycle/degree: $P = 0.461$, 12 cycle/degree: $P = 0.741$, 18 cycle/degree $P = 0.819$), macular thickness ($P = 0.270$), and QOL scores ($P = 0.303$) between the groups of DME.

Conclusion: The visual function, macular thickness and vision related quality of life were comparable between the group of DME at baseline and at three months post- focal laser photocoagulation.

Supervisor:

Associate Professor Dr Zunaina Embong

Co-supervisors:

Dr Bethel Indira Livingstone

Dr Azriani Ab Rahman

EVALUATION OF RETINAL NERVE FIBRE LAYER THICKNESS AND ITS ASSOCIATION WITH HBA1C AND OXIDISED LDL AMONG TYPE 2 DIABETES MELLITUS WITH NON-PROLIFERATIVE DIABETIC RETINOPATHY

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Introduction: Retinal nerve fibre layer (RNFL) is an important structural neuron in the retina layer which showed to be damaged in early pathogenesis of diabetic retinopathy. Hyperglycaemia and dyslipidaemia are the factors that associated with the progression of diabetes complications.

Objectives: To compare the mean RNFL thickness among the types of non-proliferative diabetic retinopathy (NPDR) and to evaluate the association between RNFL thickness with HbA1c and oxidised LDL.

Methods: A cross-sectional study was conducted in Hospital Universiti Sains Malaysia, Kelantan involving 125 patients among Type 2 diabetes with NPDR. They were divided into mild NPDR (45 patients), moderate NPDR (45 patients), and severe NPDR (35 patients). The patients were evaluated for peri-papillary RNFL thickness by using Heidelberg Retina Tomograph III (HRT III). Eight mL fasting venous blood was taken for the measurement of HbA1c and fasting serum lipid including oxidised LDL.

Results: Severe NPDR showed the highest mean RNFL thickness 762.60 (SD 209.57) among the types of NPDR (mild NPDR: 700.27 (SD 215.44) and moderate NPDR: 738.24 (SD 200.30) respectively). However, there was no significant difference in mean RNFL thickness among the types of NPDR ($P = 0.402$). There was poor correlation between RNFL thickness with HbA1c level in NPDR groups ($r = 0.048$, $P = 0.597$). The highest median level of oxidised LDL was observed in mild NPDR (297.400, IQR 766.20), followed by moderate NPDR (259.740, IQR 731.40) and severe NPDR (90.180, IQR 325.50). There was significant difference of oxidised LDL level among mild, moderate and severe NPDR ($P = 0.032$). In general, there was significant fair negative correlation between RNFL thickness with Oxidised LDL and only mild NPDR showed significant good negative correlation ($r = -0.598$, $P < 0.001$) between RNFL thickness with oxidised LDL among the types of NPDR.

Conclusion: There was no significant difference in mean RNFL thickness among the types of NPDR. There was poor correlation between RNFL thickness with HbA1c. However, there was significant good negative correlation between RNFL thickness with Oxidised LDL especially in mild NPDR.

Supervisor:

Associate Professor Zunaina Embong

Co-supervisor:

Dr Win Mar Kyi

PREVALENCE AND CAUSES OF VISUAL IMPAIRMENT AMONG CHILDREN WITH LEARNING DIFFICULTIES IN PRIMARY SCHOOLS IN KOTA BHARU, KELANTAN

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Introduction: Vision is one of the main physical factors which contribute to learning ability. Very little information is available concerning the prevalence and causes of visual impairment among children with learning difficulties worldwide.

Objectives: This study was designed to determine the prevalence, causes of visual impairment and associated socio-demographic factors among children with learning difficulties in primary schools in Kota Bharu, Kelantan, Malaysia.

Methods: A cross-sectional study was performed commencing from April 2009 to December 2011 by a multi-stage random selection on children with learning difficulties aged between 8 to 12 years old from 20 primary schools in the Kota Bharu district. Visual acuity, ocular examination and refractive assessment were performed on 720 children. Direct questioning regarding student's socio-demographic data were

also obtained.

Results: A total of 488 (67.8%) male students and 232 (32.2%) female students were examined. The majority had presenting visual acuity of 6/9 or better, with 650 (90.2%) in the right eye and 657 (91.3%) in the left eye. The prevalence of visual impairment (with visual acuity 6/12 or worse in either eye) was 11.2%. Unilateral visual impairment was observed in 4.0% and bilateral visual impairment was noted in 7.2%. The main cause of visual impairment was refractive error (90.1%), while other causes include corneal opacity (3.7%), ptosis (4.9%) and optic disc coloboma (1.3%). Age and gender are significantly associated with visual impairment (P value was less than 0.001 using Multiple Logistic Regression).

Conclusion: The prevalence of visual impairment was 11.2% in children with learning difficulties. Refractive error remains the predominant cause of visual impairment. Increasing age and female gender are significantly associated with visual impairment. However, there was no significant association between level of parental education and total parental income with visual impairment.

Supervisor:

Associate Professor Dr Shatriah Ismail

Co-supervisor:

Dr Adil Hussein

EVALUATION OF THE EFFICACY TO TOPICAL CYCLOSPORINE A 0.05% ON DRY EYE POST-PHACOEMULSIFICATION

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Introduction: Dry eye condition can greatly impair the quality of life in patients. Dry eye conditions are found to emerge inevitably in most patients after phacoemulsification surgery. Topical cyclosporine A 0.05% has been shown to combat dry eye. Efficacy of topical cyclosporine for dry eye post-phacoemulsification surgery needs further study.

Objective: To evaluate the efficacy of topical cyclosporine A 0.05% on dry eye patients post-phacoemulsification by comparing the means of dry eye parameters.

Methods: This randomized controlled trial included 105 patients from Hospital Universiti Sains Malaysia, Kelantan, whom fit the inclusion criteria, from May 2010 to April 2012. Patients with dry eye after underwent phacoemulsification were randomized into cyclosporine and control group. At the end of the study, there were 31 patients in the cyclosporine group and 28 in the control group. Patients in the cyclosporine group were prescribed with Topical Cyclosporine A 0.05% twice per day and patients in the control group were given preservative free artificial tears twice per day. Patients were being followed up at pre-operation, at one week, six week, and

12 weeks after surgery. They were subjected to dry eye tests, namely, tears break up time (TBUT), schirmer's test, and impression cytology of the inferior fornix. Data were analyzed using independent t test for numerical variables, chi-square test, Fisher's exact test, and repeated measure ANOVA.

Result: Seventy six percent of the patients studied have worsening of dry eye parameters after phacoemulsification. There was no significant difference of age, gender, diabetes status and hypertension status between the groups. There was no significant difference between the cyclosporine and control group in terms of tears break up time ($P = 0.191$), Schirmer's test 1 ($P = 0.692$) and goblet cell count ($P = 0.109$).

Conclusion: Topical Cyclosporine A 0.05% is not effective in improving the lipid layer via TBUT, aqueous layer Schirmer's test and mucin layer goblet cell count in dry eye patient post-phacoemulsification after 12 weeks of treatment in this study.

Supervisor:

Associate Professor Dr Raja Azmi Mohd Noor

Co-supervisors:

Dr Siti Raihan Ishak

Dr Sharifah Emilia Tuan Sharif

A CROSS-SECTIONAL STUDY OF POST CONCUSSION SYMPTOMS IN PATIENTS WITH MILD TRAUMATIC BRAIN INJURY PRESENTED TO EMERGENCY DEPARTMENT

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MMed (Emergency Medicine)

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Introduction: Mild traumatic brain injury (TBI) is commonly presented to emergency department. Despite designation mild, the adverse outcome from this injury can be significant. Post-concussion symptoms (PCS) are well known sequelae after mild TBI. Most of the patients without acute events are discharged without specific advice and follow up care. Little is known about disabling effect of mild TBI seen at ED beyond acute medical encounter.

Methods: This study was a prospective study conducted from September 2010 until September 2011. Translated Rivermead Post-Concussion Symptoms Questionnaire (Bahasa Melayu version) was used to assess patient's PCS. A total of 57 patients were enrolled in this study. Patients were reassessed within 24 hours presentation at ED (baseline), followed by telephone calls interview after one month and three months post injury. However, nine patients were uncontactable during follow up after one month and three months. Head CT scan was done in all patients during their presentation to ED, 28 patients were found to have positive CT findings.

Result: From this study, we found the mean score was decreased over time. The mean score at baseline was 6.68 (SD

2.72) at one month and 1.79 at three months. By using pair wise comparison, we found significant difference of mean score between two different time interval. The difference of mean score between baseline and 1month was 4.19, 5.12 between baseline and three months and 0.93 between one month and three months.

The difference of mean score between CT scan positive and CT negative also significant. Baseline RPQ mean score was 9.73 in CT scan positive patients compared to 4.55 in CT scan negative patients. The RPQ mean score at one month was 4.27 in CT scan positive whereas 1.41 in CT scan negative. At three months, the mean score was 2.85 in CT scan positive and 0.90 in CT scan negative.

Conclusion: As a conclusion, there was significant difference of RPQ mean score based on time and for those with CT positive and CT negative findings.

Supervisor:

Dr Kamarul Aryffin Bin Baharudin

Co-supervisor:

Dr Kamarul Imran Bin Musa

CHILDHOOD ATOPIC ECZEMA: CHILDREN'S QUALITY OF LIFE AND FAMILY IMPACT

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MMed (Family Medicine)

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Introduction: Childhood atopic eczema accounted 40% of the referral to pediatric dermatology clinic in Malaysia. One of the most important issues that should be discussed during outpatient hospital based clinic is health related quality of life (HRQOL). HRQOL was defined as a broad multidimensional concept that usually includes self-reported measures of physical and mental health.

Objectives: The current study was aimed to determine the quality of life of children with atopic eczema, impact of atopic eczema to the family and associated factors for children's quality-of-life.

Methods: A cross-sectional study conducted at Dermatology clinic, Hospital Raja Perempuan Zainab II, Kota Bharu, Malaysia from January 2010 to January 2011. Children who were diagnosed as atopic eczema, aged between 5 and 18 years and fulfilled the inclusion and exclusion criteria were selected using systematic random sampling. Quality-of-life (Qol) was measured using CDLQI. Family Impact was measured using DFI. The Children's Dermatology Life Quality Index (CDLQI) and Dermatology Family Impact (DFI) questionnaires were specifically designed to measure Qol of children with atopic eczema and the family impact of the similar disease. Data were analyzed according to distributions. Descriptive analyses were done for quality of life and family impact score and univariate and multivariate analyses were

done to determine associated factors for Qol.

Results: A total of 110 participants with 100% response rate entered this study. Majority of subjects suffered mild to moderate which comprised of 30.9% and 62.7%, respectively. Only 6.4% had severe atopic eczema. The median (IQR) for quality of life and family impact score was 8.0 (8.0) and 7.0 (9.0), respectively. Disease severity was the significant associated factor for quality of life in childhood atopic eczema. Regression analyses showed that 15% of the variance in quality of life score could be explained by disease severity score.

Conclusion : In the present study, the overall children's quality of life was not impaired because not all the items in the children's quality of life were equally affected. Childhood atopic eczema also had no impact on family life as majority of parents perceived the disease was not severe. The only significant associated factor for children's quality of life was disease severity. Measurement of HRQOL among childhood atopic eczema should be done along with objective disease severity assessment.

Supervisor:

Dr Rosediani Muhamad

Co-supervisor:

Dr Norhayati Mohd Noor

PREVALENCE AND FACTORS ASSOCIATED WITH PRE-MARITAL SEXUAL ACTIVITIES AMONG SECONDARY SCHOOL STUDENTS IN BACHOK, KELANTAN

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MMed (Family Medicine)

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Objectives: This study was carried out to determine the prevalence and the factors associated with pre-marital sexual activities among secondary school students in Bachok, Kelantan. Other specific objectives were to describe the knowledge on sexual and reproductive health among the students, to describe their attitudes towards the practice of pre-marital sexual activities and to describe the pattern of pre-marital sexual activities among the secondary school students in Bachok, Kelantan.

Methods: A cross-sectional study was conducted between April and June 2009, involving 1032 school going adolescents from form one to form five. Samples were recruited from seven randomly selected secondary schools in Bachok, Kelantan. One class from each form were randomly picked for each of the selected schools. Data were collected using a newly constructed questionnaire which had been validated. The questionnaire was self-administered but the students were guided. The questionnaire includes sections on socio-demographic data, knowledge on sexual and reproductive health, attitudes towards the practice of premarital sexual

activity and the practice of premarital sexual activities. Data was analyzed using PASW 18.

Result: A total of 1032 secondary school students consisting of 449 males and 583 females were recruited in this study. Their age ranged from 13 to 17 years old with a mean age of 15 years (SD 1.4). About 51.0% of the students have good knowledge in sexual and reproductive health while 49.0% have poor knowledge. The mean score for knowledge was 45.2 (SD 7.06; 95% CI: 44.7, 45.6). The students had very poor knowledge about pregnancy preventions. About 51.6% of the students had positive attitude towards pre-marital sexual activities while 48.4% had negative attitude. The mean score for attitude was 55.1 (SD 9.37; 95% CI: 54.5, 55.6). The results showed 24.0% (95% CI: 21.3, 26.6) of students were involved in pre-marital sexual activities (57.4% males and 42.6% females). Among our subjects, 10.7% had experienced kissing and necking, 10.8% had embraced with sexual intention, 16.5% had petted while 9.7% were involved in sending pornographic materials and 4.7% had experienced sexual intercourse. Among those who are sexually active, 51.2% had their debut in sexual intercourse at age 14 years or younger. Exposure to obscene materials was the strongest factor associated with pre-marital sexual activities with the odds of 5.00 (95% CI: 2.89, 8.66). Other factors were older age group (OR 2.25; 95% CI: 1.52, 3.32), feel lack of family love (OR 1.43; 95% CI: 1.01, 2.02), not performing obligatory prayers (OR 1.58; 95% CI: 1.03, 2.44), smoking and/or substance use (OR 2.10; 95% CI: 1.44, 3.06), history of being sexually molested (OR 2.49; 95% CI: 1.50, 4.15), poor academic performance (OR 1.87; 95% CI: 1.04, 3.36), having negative attitude towards pre-marital sexual activities (OR 2.26, 95% CI: 1.57, 3.24) and having poor knowledge on sexual and reproductive health (OR 0.42; 95% CI: 0.28, 0.62).

Conclusions: The prevalence of pre-marital sexual activities in this study was higher than previous findings but this interpretation needs to be done cautiously since this study operated on definition different from previously used in the subjects. There are many factors which are associated with pre-marital sexual activities.

Supervisor:

Dr Azriani Abdul Rahman

Co-supervisor:

Professor Shaiful Bahari Ismail

FACTORS ASSOCIATED WITH UNAWARENESS OF CORRECT FASTING BLOOD GLUCOSE TARGET AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Knowledge is one of the important factors that contribute to one's awareness. Patients' awareness on fasting blood glucose (FBG) was postulated as one of the components that could contribute to good glycaemic control. Studies have shown that there are multiple factors that could contribute to under achievement of diabetes targets. A holistic approach by an established team should be chosen.

Objectives: The objectives of this study are to determine the proportion of patients who are not aware of correct FBG target and its associated factors among type 2 diabetes mellitus patients attending Diabetes Mellitus Centre (DMC), Hospital Universiti Sains Malaysia (HUSM).

Methods: It is a cross-sectional study in which a total of 460 type 2 diabetes mellitus patients were enrolled. A questionnaire was used to assess the participants' awareness of correct FBG. Patients were classified as being aware of correct FBG target if they have target FBG value of 6 mmol/L and less. The main outcome measures were proportion of diabetic patients who were unaware of correct FBG target and the associated factors of unawareness of correct FBG target.

Results: Data was analyzed using SPSS version 18.0. The proportion of patients who were unaware of correct FBG target was 46.7%. The associated factors of unawareness of correct FBG target were male gender, treatment with insulin only or insulin combination therapy and having diabetic green book.

Conclusion: After the factors contributing to unawareness of correct FBG target were identified, more interventions should be targeted to this group of patients in order to achieve the good glycaemic control.

Supervisor:

Dr Juwita Shaaban

Co-supervisors:

Dr Imran Ahmad

Dr Nor Azwany Yaacob

IMPACT OF CAREGIVING EXPERIENCE AND SOCIAL SUPPORT ON THE OUTCOME OF SCHIZOPHRENIA PATIENTS

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Introduction: Schizophrenia is a chronic mental illness which requiring consistent support from a caretaker in order to provide medication's supervision, aid in activity of daily living and also for emotional support. Ironically, in view of the chronic course of the illness, it also leads to burden and breakdown among the caretakers.

Objectives: To assess the association between care giving experience and social support towards the outcome of Schizophrenia patients.

Methods: The present study consisted of two parts. The first part involved the validation of Experience of Care giving Inventory (ECI) Scale for future use in the local population. The scale was translated into Malay language and a pilot study was done among 132 caregivers of schizophrenia patients in the psychiatry clinic of Hospital Universiti Sains Malaysia (HUSM), Kelantan. The data of the pilot study were analyzed and showed that the Cronbach's alpha was ranged from 0.6–0.9. In second part of the study, 60 caregivers and Schizophrenia patients were selected based on inclusion and exclusion criteria in the Psychiatry Clinic, HUSM. The participants were selected using non probability random sampling. The data was collected using the validated ECI scale obtained from Part 1 study, and also with the validated Multidimensional Scale of Perceived Social Support (MSPSS). The outcomes of the patients were assessed using Positive and Negative Syndrome Scale (PANSS) and Personal and Social Performance Scale (PSP).

Results: The majority of the caregivers were Malays (95%), female (57%), married (80%) with mean age of 53.4 (SD 13.55). Sixty six percent of them were parents and almost 80% had more than 10 years of care giving. Whereas, for the schizophrenia patients, the mean age was 32.4 (SD 9.90), females (58%) and 48% of them had chronic course of illness with duration of illness more than 10 years. About 70% of the patients were on oral antipsychotic medication and 20% of them were on combination of both depot injection and oral antipsychotic medication. The mean total score of PANSS was 64.82, where the negative scale was higher than the positive scale; 19.67 (SD 5.11) and 12.92 (SD 3.72), respectively. Meanwhile the mean total score of PSP was 63.65 (SD 12.86). The negative care giving experience was higher than the positive care giving experience with the mean score of 62.45 and 32.45, respectively. Regarding the factors associated with the outcome of the schizophrenia patients, the positive and negative care giving experience were found highly related to the scores in PANSS and PSP, although no significant finding was observed in the perceived social support.

Conclusions: This study reports educational level of caregivers is associated with negative care giving experience. This care giving experience impairs social support toward Schizophrenia patients and indeed worsens the outcome of the patients.

Supervisor:
Professor Mohd Razali Salleh

THE RELATIONSHIP BETWEEN INSIGHT, PSYCHOPATHOLOGY AND COGNITIVE FUNCTION AMONG MENTAL OFFENDERS WITH SCHIZOPHRENIA IN HOSPITAL BAHAGIA ULU KINTA PERAK

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Objectives: The aim of this study is to determine the relationship between insight, cognitive function and psychopathology among mental offenders with schizophrenia at Hospital Bahagia Ulu Kinta Perak.

Methods: Seventy mental offenders with schizophrenia admitted to acute forensic and female ward 7 at Hospital Bahagia Ulu Kinta were studied between December 2009 and May 2010. Subjects' psychopathology, insight and cognitive function were assessed using Positive and Negative Syndrome Scale (PANSS), Insight and Treatment Attitude Questionnaire (ITAQ) and validated Malay version of Mini Mental State Examination (MMSE) respectively. Statistical analyses were performed using SPSS version 19.0.

Results: Mental offenders against person were significantly associated with unwell mental status at the time of alleged offence and received treatment at later age compared to offenders against property or drug related. This unwell mental status at the time of the offence is significantly associated with positive PANSS score. Mental offenders under drug related and other offence category had significantly higher negative PANSS score. No significant association between other subjects' characteristics with psychopathology was observed. Poor insight was associated with total, negative and general psychopathology PANSS scores. No significant association with subjects' characteristic, positive PANSS score or cognitive function was observed. Mental offenders with tertiary educational level, longer duration of illness or treatment significantly have better cognitive function. No significant association between cognitive function and other subjects' characteristics or psychopathology was observed.

Conclusions: There were significant differences found in some of the sociodemographic, clinical and forensic characteristics of the mental offenders. There are three main findings of this study. Firstly, unwell mental status at the time of offence was associated with offence against person. Secondly, negative symptom was associated with drug related offence and thirdly, poor insight was associated with negative symptoms and general psychopathology.

Supervisor:
Dr Zahiruddin Othman

MULTIPLANAR RECONSTRUCTED CT STUDY OF NORMAL ACETABULUM – INCLINATION ANGLE, ANTEVERSION ANGLE, AND ACETABULAR DEPTH

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Introduction: Total hip arthroplasty (THA) is one of the commonest orthopaedic procedure performed anywhere in the world. There is vast array of different commercially available prostheses for the acetabular and femoral components for THA. Nevertheless, they share common biomechanical goals, structural materials as well as complications. Among possible complications include prosthesis loosening, infection, dislocation, malalignment, instability, fracture, cement extrusion and heterotopic bone formation. To reduce the rate of complication, pre-operative planning of THA is a very important step to avoid extra unnecessary cost and morbidity. Acetabular morphometry study aids the surgeon to accurately plan THA. Among the important parameters of acetabular morphometry are inclination angle, anteversion angle and acetabular depth.

Objectives: The aims of this study were to use multiplanar reconstructed CT images as the modality to determine the values of normal acetabulum among Malay patients undergoing CT involving the pelvis in Hospital Universiti Sains Malaysia, to compare gender as well as age group differences of the acetabular morphometric parameters.

Methods: This study was a cross-sectional study conducted for 18 months duration, from November 2010 till May 2012. A total of 133 samples were collected from patients who have undergone CT scan involving the pelvis for non-orthopaedic indications in Radiology Department, Hospital Universiti Sains Malaysia (HUSM), Kubang Kerian, Kelantan during the study period.

Results: A total of 133 samples (266 acetabulums) were measured. The mean and standard deviations for the acetabular inclination angle [Right: 38.14° (10.26); Left: 38.28° (3.91)], acetabular anteversion angle [Right: 19.96° (4.89); Left: 19.50° (4.53)] and acetabular depth [Right: 2.56 cm (0.30); Left: 2.53 cm (0.31)] were successfully determined. There was no significant difference between acetabular parameters when compared to the corresponding sides in male and female ($P > 0.001$). There was significant difference between age groups with the most significant mean difference was found in group 1 (18 to 30 years) versus group 4 (51 to 60 years) in all the acetabular morphometric parameters.

Conclusion: There was no significant difference in the acetabular inclination angle, acetabular anteversion angle and acetabular depth between genders. However, there were significant differences when the parameters were compared between age groups, especially between the two extremes of age groups.

Supervisor:
Dr Rohaizan Yunus
Co-supervisor:
Dr Amran Ahmed Shokri

CORRELATION OLFACTORY FOSSA DEPTH WITH VERTICAL MIDDLE TURBINATE ATTACHMENT IN OPTIMUM OBLIQUE CORONAL PLANE MDCT SCAN AMONG MALAY PATIENTS IN HUSM

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Introduction: Olfactory fossa depth is the important structure for functional endoscopic sinus surgery (FESS). It is because increase risk of intracranial penetration during this procedure if the olfactory fossa depth is deeper. There was no study has been done in our populations.

Objectives: The aims of this study were to determine the type of olfactory fossa depth among Malay population and to correlate it with the vertical middle turbinate attachment on optimum oblique coronal plane MDCT scan (three dimensional reformatted coronal images). It was also to determine the optimum oblique coronal angle for the optimum oblique coronal plane MDCT scan that was used to measure the olfactory fossa depth.

Methods: This study was a cross sectional conducted study prospectively from June 2010 until May 2012 for a total 23 months. All CT scan paranasal sinus examinations performed in the Department of Radiology, HUSM were screened. A total of subjects who fulfilled the inclusion criteria were 45 subjects. Ethical clearance was obtained from Research Ethics Committee (Human), Universiti Sains Malaysia. CT scan of paranasal sinus was performed with the MDCT scan (128 slice multidetector CT scan Siemens Somatom Definition AS) according to the study protocol. Measurements of olfactory fossa depth were performed manually on the optimum oblique coronal plane of Multiplanar Reformatted (MPR) coronal image with Picture Archiving Communication System (PACS). Data entry and analysis were performed using Statistical Package for Social Sciences PASW (R) Statistics 18.

Results: There were 41 (91.1%) subjects who had olfactory fossa depth (Keros) type 2 was on the right side and 42 (93.3%) on the left side. Only 3 (6.7%) subjects had olfactory fossa depth (Keros) type 1 on the right and 2 (4.4%) on the left side. The type 3 olfactory fossa depth (Keros) was 1 (2.2%) bilaterally. There was a significant positive correlation of both side olfactory fossa depth with vertical attachment distance of the middle turbinate, $r = 0.532$, $P < 0.01$ for the right side and $r = 0.357$, $P < 0.05$ for the left side. However, negative correlation was found between both olfactory fossa depth and true vertical attachment distance of the middle turbinate, $r = -0.367$ right side and $r = -0.355$ left side with $P < 0.05$ both sides. No correlation was found between olfactory fossa depth with the whole vertical attachment length of the middle turbinate. The mean of optimum oblique coronal angle for the optimum oblique coronal plane was range of 84 to 102 degree.

Conclusions: The olfactory fossa depth increases, the vertical attachment distance of the middle turbinate will be longer. Conversely, the olfactory fossa depth increases, the true vertical attachment distance of the middle turbinate will be shorter. Majority of subjects have olfactory fossa depth (Keros)

type 2, so Malay patients in HUSM are at intermediate risk for the intracranial inadvertent during FESS. The olfactory fossa depth can be accurately measures in the optimum oblique coronal plane on MDCT scan where the optimum oblique coronal angle is between ranges of 84 to 102 degree.

Supervisor:

Dr Rohaizan Yunus

Co-supervisors:

Dr Ramiza Ramli

Mr Shamim Khan

DEVELOPING THE RISK PREDICTOR OF CHRONIC SUPPURATIVE OTITIS MEDIA IN ASSOCIATION WITH HYPERSENSITIVITY STATE

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Introduction: Chronic suppurative otitis media (CSOM) is a main cause of acquired hearing impairment especially in developing countries. In view of worldwide burden of CSOM, recognizing the risk factors that contribute to the pathogenesis of CSOM is indispensable. There are some evidences regarding the relationship between hypersensitivity states and middle ear effusion; however the association between allergy and CSOM has not been well documented.

Objective : To evaluate the association between allergy and chronic suppurative otitis media (CSOM).

Methods: A comparative cross sectional study was carried out on 2 groups of subjects. 62 patients who were under regular otorhinolaryngology clinic (HUSM) follow up for CSOM were in the case group. The subjects in the control group were selected from USM staffs with no ear pathology. Meticulous history was taken and otoscopic examination and pure tone audiometry (PTA) were conducted. Subsequently, skin prick test was performed for all subjects to establish the presence of allergy.

Results: A total of 124 cases which included 62 patients with CSOM and 62 controls participated in this study. The age has been ranging from 15 to 70 years involving 33.1% of males and 66.9% of females. The commonest positive reaction to the allergens was noticed as *Blomia Tropicalis* and *Dermatophagoides* in both CSOM and control groups which are considered as house dust mite. The prevalence of allergy in CSOM and control groups was detected as 59.7% and 30.6% respectively. The analysis of the data showed a significant association between allergy and CSOM ($P = 0.001$). The range of conductive hearing loss (CHL) in CSOM cases was from 5 to 50 dB. The Mean (SD) of CHL in allergic and non-allergic CSOM subjects was reported as 28.5 (SD 11.2) and 25.4 (SD 12.8) respectively. However, no significant relation

between severity of hearing loss and presence of allergy in CSOM patients was noted ($P = 0.327$).

Conclusion: It seems that the hypersensitivity states have a role in the pathogenesis of CSOM. However, we suggest for the further inclusive studies in different populations to establish this association.

Supervisor:

Associate Professor Dr Mohd Khairi

Co-supervisor:

Dr Ramiza Ramza Ramli

THE EVALUATION OF COGNITIVE PERFORMANCE IN OBSTRUCTIVE SLEEP APNOEA PATIENT BY USING VALIDATED MALAY VERSION OF MINI MENTAL STATE EXAMINATION

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Introduction: Obstructive Sleep Apnoea Syndrome (OSAS) is a condition where breathing stops temporarily or gets very shallow during sleep. It is most often caused by a complete or partial blockage in the throat. Untreated, it can result in neuropsychiatric and cardiovascular sequelae. Neuropsychiatric effects may include depression and cognitive dysfunction that can disrupt professional, family, and social life. Patients with OSA may develop deficits in the cognitive domains of attention, concentration, executive function, verbal and visuospatial memory, constructional abilities, and psychomotor functioning. The validated Malay Version of MMSE is one of the instrument to assess the cognitive function. The purpose of this study is to evaluate the cognitive performance in OSA patient.

Objectives: To compare cognitive performance between moderate and severe OSA patient and to analyze relationship of oxygen saturation (saO₂) with cognitive performance.

Methods: Cross sectional study on patients age 18 to 60 years old attending sleep clinic who underwent sleep study (polysomnography) in Hospital University Sains Malaysia from August 2011 to May 2012. The consented participants who fulfilled the criterias were interviewed using a questionnaire regarding demographic data, date of polysomnography and their polysomnography result. After that, the cognitive performance was evaluated using Validated Malay Version of Mini Mental State Examination which measured five areas of cognitive function which is orientation, registration, attention and calculation, word recall and language abilities, and visuospatial.

Result: A total of 38 OSA patients participated in this study with equal distribution in each groups. In our study

showed that there was a statistically significant difference between the moderate OSA group and severe OSA group on cognitive performance ($P = 0.04$). We also found that there was no significant linear correlation between oxygen saturation and cognitive performance ($P = 0.27$).

Conclusions: Cognitive performance of severe OSAS patients was mildly impaired in comparison to moderate OSAS. There was no association between oxygen saturation with cognitive performances in moderate and severe OSA patients. This may be due to limitations in performing MMSE test as it is unable to identify in very minimal or extremely severe cognitive dysfunction. More sophisticated test battery is required to detect small changes in cognitive performance.

Supervisor:
Associate Professor Dr Baharudin Abdullah
Co-supervisor:
Dr Irfan bin Mohamad

THE CORRELATION OF HEMATOCRIT LEVEL WITH APNEA/HYPOPNEA INDEX (AHI) IN OBSTRUCTIVE SLEEP APNEA SYNDROME

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Introduction: Obstructive sleep apnea syndrome is characterized by repetitive upper airway obstruction during sleep and associated with intermittent hypoxic stress. This condition can lead to oxyhemoglobin desaturation and has possibility to stimulate erythropoiesis, lead to increased hematocrit.

Objectives: The study aimed to identify level of hematocrit in obstructive sleep apnea syndrome (OSAS) patients and to determine the correlation between hematocrit levels and severity of obstructive sleep apnea syndrome (OSAS) based on apnoea/hypoapnoea index (AHI) and average oxygen desaturation level in polysomnography.

Methods: Descriptive cross sectional study on male patient attending OSAS Clinic, Department of Otorhinolaryngology–Head and Neck Surgery, Hospital Universiti Sains Malaysia. The study was done from April 2010 to April 2011. The consented participants who fulfilled the criterias were interviewed regarding demographic data and underwent polysomnography. The assessment of severity of OSAS was done using polysomnography with based on AHI and average oxygen desaturation. Then, followed blood withdrawn to measure the hematocrit level.

Results: A total of 53 male patients were participated in this study with 17 patients in control group (non-OSAS) and 36 patients in test group (OSAS). A wide range of OSAS severity was found apnoea/hypoapnoea index (AHI) : 50-55

(SD 22.62), range 12.0–97.0; average oxygen desaturation: 9.15 (SD 4.29) %, range 4.8–20.0%; hematocrit: 44.0 (SD 3.27) %, range 37.0–49.0. Hematocrit level in OSAS patients was higher than non-OSAS patients. Pearson correlation analysis revealed significant correlation between hematocrit with average oxygen desaturation level and BMI. However, no significant correlation between AHI and hematocrit level.

Conclusion: We concluded that patients with known case of OSAS had slightly higher hematocrit levels than subjects with non OSAS. Increase level of hematocrit is significantly correlated with average oxygen desaturation but not with AHI from PSG.

Supervisor:
Dr Hazama binti Mohamad
Co-supervisor:
Dr Ramiza Ramza Ramli

EFFECTS OF VIRGIN COCONUT OIL AS ADJUNCT THERAPY IN THE TREATMENT OF ALLERGIC RHINITIS

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Introduction: Allergic rhinitis is a disease of type 1 immediate hypersensitivity reaction, which is characterized by one or more of the following symptoms: sneezing, rhinorrhea, nasal congestion, and itchiness. Management of allergic rhinitis includes patient education and counselling, medications and allergen-specific immunotherapy.

Objectives: To compare magnitude of allergic rhinitis symptoms (nasal and non nasal symptoms) in allergic rhinitis improvement after virgin coconut oil ingestion and to determine the side effects of virgin coconut oil following its consumption.

Methods: An open label prospective randomised controlled clinical trial was carried out in otorhinolaryngology clinic HUSM. Fifty-two patients with history suggestive of allergic rhinitis were recruited in this study. They were divided into control and test group. The patient's particular and history takings were recorded and compiled. Patients then undergone skin prick test. The allergens included in this study were Dermatophagoides pteronyssinus (house dust mite), Dermatophagoides farina (house dust mite), Blomia tropicalis (house dust mite), Felis domesticus (cat) and shrimp. Symptoms score were recorded at before and after completed 28 days of study. The control group was given oral antihistamine while the test group was given oral antihistamine and 10 mL of virgin coconut oil three times per day.

Result: The highest prevalence of positive skin prick test among subjects in control group was *Dermatophagoides pteronyssinus* (100%) and the lowest prevalence was *Dermatophagoides farinae* (11.5%). The highest prevalence of positive skin prick test among subjects in test group was *Dermatophagoides pteronyssinus* (96.2%) and the lowest prevalence was *Felis domesticus* (42.3%). There were no statistically significance differences in the mean nasal and non-nasal symptom score between test and control group, except for the mean nasal sneezing score which showed that the difference in nasal sneezing score is much better in control than test group. More than half of the subjects in test group (65.4%) experienced side effects from consumption of virgin coconut oil. Approximately 50% complained of gastrointestinal tract side effects.

Conclusion: Virgin coconut oil had no significance effects as adjunct therapy in allergic rhinitis and has more side effects. We concluded that virgin coconut oil is not suitable as an adjunct therapy in allergic rhinitis.

Supervisor:

Associate Professor Dr Rosdan Salim

Co-supervisor:

Dr Ramiza Ramza Ramli

GRAFT TUNNEL MISMATCH IN ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: THE ASSOCIATION BETWEEN PATELLA TENDON LENGTH AND PATIENTS HEIGHT AMONG THE MALAY

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Objective: The purpose of this study is to find if there is any correlation between patella tendon length that is used in ACL reconstruction to the patient's height. Measured the length of the tendon during intra-operative as this is the measurement that is useful in preventing a graft tunnel mismatch.

Methods: This study was done in Military Hospital Lumut and Military Hospital Sultan Mizan in Kuala Lumpur. The measurement was taken as the deep layer of the tendon graft, from the lower pole of the patella to the upper end of the tibial bone block. The measurement was taken as in millimeters. A demographic data questionnaire was given to all patients undergoing ACL reconstruction to fill in.

Results: A total of 31 patients had underwent ACL reconstruction done using BPTB Graft. The mean length of 39.74 mm for the patella tendon graft length and mean height of 169.57 cm among the 31 patients. Simple linear regression analysis done and shows that there is a significant association between height and PTL length among the study subjects. Simple logistic regression analysis show that a person who is 1cm taller will have 0.375 mm longer PTL length (crude

b = 0.375, 95% CI: 0.020, 0.730, $P = 0.039$), and 13.9% of the variation in PTL length was explained by height.

Conclusion: We find that there is correlation between patients height and patella tendon length. Caution should be taken as ACL reconstruction in Malaysian has higher risk in graft tunnel mismatch as with other Asian counterparts.

Supervisor:

Dr Tengku Muzaffar Tengku Muhd Shihabudin

OUTCOME AND QUALITY OF LIFE FOLLOWING TUMOUR-RELATED HEMIPELVECTOMY. A REVIEW OF CASES PERFORMED IN HOSPITAL UNIVERSITI SAINS MALAYSIA BETWEEN YEAR 2001–2010

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Introduction: Hemipelvectomy surgeries are challenging and highly demanding because of the significant reported complications, morbidity, and mortality. While external hemipelvectomy was the gold standard of treatment previously, the standard care has been gradually shifting towards limb-salvage surgeries or internal hemipelvectomies. Best to our knowledge, not many reported outcomes in relation to Malaysian population are available in the literature. This study aims to review cases of pelvic tumours that underwent hemipelvectomy in a tumour centre for the past one decade.

Methods: Sixty-four cases of pelvic tumours of various types and stages who were subjected for hemipelvectomy surgeries between 2001 till 2010 were reviewed. A total of 23 cases of external hemipelvectomies and 41 cases of limb-salvage surgeries included in the study. Tumours involved the ilium, acetabulum, pubic bones, sacrum, or a combination of these. Survival analysis on local recurrence, distant metastases, and disease-specific death were performed. Functional outcomes and the quality of life of the remaining survivors were evaluated using the Musculoskeletal Tumor Society functional scores and the European Organisation for Research and Treatment of Cancer Questionnaire.

Results: The 1-year and 5-year local recurrence-free survival rate for the entire study group were 80.80% and 68.20%, respectively. Most prognostic factors for survival were microscopic margin, stage of tumour, histological diagnosis, and types of surgery. Longer duration of follow-ups, good pre-operative performance status and early ambulation after surgery were associated with higher functional score. However, all external hemipelvectomy patients had poor functional outcome after surgery. Good functional outcomes in limb-salvage surgery ensured the ability of patients to return to previous job. Factors that affect the life quality of patients include restriction of physical, social and role functioning, and chronic pain. Majority of patients had adapted with their

disability and satisfied with the outcome of their treatment. Overall results showed the outcomes in this study group were comparable to other previous studies.

Conclusion: Pelvic tumour resections are complex. Achieving adequate surgical margin is necessary for local and systemic disease control. Functional outcomes were significantly affected by surgery. However, major tumour-related hemipelvectomy is justified with proper indication and selection of patients.

Supervisor:

Dr Norazman Mat Zin

Co-supervisor:

Professor Dr Zulmi Wan

PRE-OPERATIVE PHYSIOTHERAPY AND SHORT-TERM FUNCTIONAL OUTCOME OF PRIMARY TOTAL KNEE ARTHROPLASTY

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Introduction: Physiotherapy is an important part of rehabilitation after total joint arthroplasty surgery. The significant impact of pre-operative physiotherapy on the functional outcomes of arthroplasty surgery is still a subject under study. Methodological limitations of the available data are the main reason for lack of conclusive evidence on this matter.

Objective: The aim of this study was to evaluate the effect of pre-operative physiotherapy on the short-term functional outcome of primary total knee arthroplasty.

Methods: A randomized controlled trial was done from 1st of June 2010 to 10th of August 2011. A total of 50 patients with primary knee osteoarthritis who underwent unilateral primary total knee arthroplasty at HUSM were involved. 24 patients in the physiotherapy group performed physical therapy exercise for 6 weeks immediately prior to surgery. No pre-operative physiotherapy was performed by 26 patients in the non-physiotherapy group. Post-operatively, all patients went through similar physiotherapy regime in the rehabilitation period. The socio-demographic characteristics of patient were documented. Assessment was done at 3 points which are pre-operative, 6 weeks and 3 months post-operatively. The primary outcome measurement tool was the algo-functional Knee Injury and Osteoarthritis Outcome Score (KOOS). The difference of post-operative range of motion was evaluated for both physiotherapy and non-physiotherapy group.

Results: Both groups showed significant difference for all KOOS subscales (P value < 0.001). The mean score difference at 6 weeks and 3 months was not significant in Sports and recreational activities subscale for both groups

(P value > 0.05). The time-group interaction analysis showed only significant difference for Symptoms and Daily living activities between groups (P value < 0.05). There was no significant difference with regards to time in pain, sport and recreational activities and Quality of life between groups (P value > 0.05). The range of motion difference was significant within physiotherapy and non-physiotherapy group (P value < 0.001). The pre-operative and 3 months ROM showed no significant difference in both treatment group (P value > 0.05). Time-group analysis showed no significant difference of ROM between groups (P value 0.928).

Conclusion: A 6 week pre-operative physiotherapy did not have significant impact on the short-term functional outcomes and range of motion after primary total knee arthroplasty.

Supervisor:

Dr Amran bin Ahmed Shokri

THE GEOMETRY OF PATELLA BONE, PATELLA TENDON, AND INTERCONDYLAR NOTCH MEASURED BY KNEE MRI AMONG THE MALAY

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MMed (Orthopaedics)

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Introduction: It is important to know the anthropometric measurement especially when a surgery requires precision. In ACL reconstruction using Bone Patella Tendon Bone (BPTB) graft, assessing the length of the patella tendon is very helpful to avoid graft tunnel mismatch. In TKR where the patella is to be resurfaced, assessing the patella thickness would be important to avoid over or under resection of the patella. Most of the figures regarding anthropometric measurement in the literatures were from the Western population. In general, the Asian body size is smaller comparing to Western population thus, their knee anthropometric measurement might not be similar.

Objective: The main objective to this study is to determine the intercondylar notch width, patella tendon length and patella thickness in Malay. We also study the correlation between length, width and thickness of the patella.

Methods: This research was a cross-sectional study that involved analysis of data taken from the magnetic resonance imaging. Forty subjects were selected and their MRI was reviewed. We determines the measurement of the patella bone length, thickness and width, patella tendon length and intercondylar notch width by MRI using Picture Archiving and Communication (PAC) System.

Result: The mean patella tendon length was 4.1 (SD 0.5) cm, patella bone length was 4.1 (SD 0.5) cm, patella bone width was 4.2 (SD 0.5) cm, patella bone thickness was 2.0 (SD 0.3) cm, intercondylar notch width was 1.4 (SD 0.2) cm and

intercondylar notch height was 1.5 (SD 0.2) cm.

Conclusion: The length of the patella tendon in Malay is comparable to other studies such as Western and other Asian population. There were significant correlation between width to thickness ratio and length to thickness ratio of the patella bone. The femoral intercondylar notch was smaller in Malay population.

Supervisor:

Dr Tg Muzaffar Tg Mohamed Shihabudin

Co-supervisor:

Dr Rohaizan Yunus

TUALANG HONEY SPRAY VERSUS FILM SPRAY (OPSITE*) AS POST-OPERATIVE WOUND DRESSING – A COMPARATIVE STUDY

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Introduction: Surgical site infection in implant related surgery is an important issue among patients particularly in orthopaedic field. Method of dressing is one of the task that need peculiar attention in reducing surgical site infection following fixation of long bone fracture with an implant. Honey base item also has a potential benefit in treating wound in implant related surgery. It is widely use as an alternative remedies in treating wound and other medical problems due to its antimicrobial activities and healing potentials.

Objective: The aim of the study is to compare the advantages of Tualang honey versus spray film (Opsite*) in term of reducing wound complications such as local skin erythema and discharge.

Methods: This is a prospective randomized controlled trial study comparing the Tualang honey spray and spray film (Opsite*) as a dressing tool in post surgery patient. Spray film (Opsite*) is commonly use as a dressing agent for post surgical wound care. All of the patient's information were documented in a Proforma form and analysed with SPSS 18.

The study was held in orthopaedic operation rooms, wards, and clinic in Hospital Universiti Sains Malaysia and involved total of 40 patients. Duration of the study was from January 2011 till November 2011 and involved patient with closed fracture midshaft of tibia or femur that fulfill the criterias of the study. It was a three arm study that consist of film spray (Opsite*) dressing, $n = 16$, Tualang honey spray, $n = 13$ and control group, $n = 11$. Each group had a same wound protocol except for the control group that involve only application of non adhesive film (Mepore). The other two groups involved application of an Opsite* spray or Tualang honey spray on the wound immediately after surgery and day three following surgery. Further wound assessment were done on day fourteen, with suture removal done and on day fourty-

two after surgery.

Results: Result showed one case of superficial surgical site infection in Opsite* spray group and one patient under control group (Mepore only) had *Acinobacter* sp. isolated from the wound's swab. The result also showed statistically, there was no association between method of dressing and wound healing and at the end of the study, all wound healed without any infection. The study stated no significant factors that influence the wound healing. However, Tualang honey spray was shown to be significant in reducing risk of hypertrophic scar formation and has similar wound outcome as compared with Opsite* spray. Some of the results were comparable with other studies on type of dressing and surgical wound healing.

Conclusion: Tualang honey spray should be considered as a safe alternative and has a comparable usage as a wound dressing material to the usual Opsite* spray.

Supervisor:

Dr Shaifuzain Abdul Rahman

Co-supervisor:

Dr Adul Nawfar Sadagatullah

PREVALENCE OF VITAMIN D DEFICIENCY AND THE EFFECTS OF 1 α CALCIDOL ON INFLAMMATION AND PROTEINURIA IN TYPE 2 DIABETIC PATIENTS WITH NEPHROPATHY

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Introduction: Vitamin D deficiency was reported elsewhere to be a common problem in diabetic nephropathy patients and it was associated with high risk of death. Unfortunately thus far, there is no data on the prevalence of vitamin D deficiency among diabetic nephropathy patients in Malaysia. The purpose of this study is to determine the prevalence of vitamin D deficiency among diabetic nephropathy patients in Kelantan Malaysia and to find out whether treatment with 1- α - calcidol will reduce the risk of death and progression to renal failure.

Methods: This study was a prospective block stratified randomization study and was performed from July 2010 until April 2012, patients were recruited from the endocrine clinics at Medical Specialist Clinic Hospital UniversitiSains Malaysia (Kelantan, Malaysia). Patients with type 2 diabetes mellitus and proteinuria aged 30 to 70 years old were included for this study. Patients with poorly controlled hypertension ($> 140/90$ mmHg), unstable BP control (change in BP medication within a month), poorly controlled diabetes mellitus (hemoglobin A1c of $> 11\%$), hyperphosphatemia (> 1.94 mmol/l), hypercalcemia (> 2.5 mmol/l), on vitamin D or analogs, or on medication that may affect calcium or bone metabolism e.g. steroids or biphosphonates, or pregnant or with cardiac arrhythmias

were excluded. Total of 101 patients were recruited with only 70 patients were randomized based on gender and vitamin D level, either vitamin D sufficient ($25(\text{OH})\text{D} \geq 75 \text{ nmol/L}$) or deficient ($25(\text{OH})\text{D} < 75 \text{ nmol/L}$). Patients were divided into 2 groups, 1 α calcidol group and control. Blood and urine were collected and tested for HbA1c, renal profile, hsCRP and urine for albumin creatinine ratio. Demographic data together with laboratory results were collected and recorded in a standard data collection sheet. Variables were analyzed using t test and chi square and logistic regression test with ANCOVA were used to identify significant association with 1 α calcidol replacement.

Result: The prevalence of vitamin D deficiency among the type 2 diabetes patient with nephropathy was 82%. All ($n = 21$) female with diabetic nephropathy had vitamin D deficiency while majority of male patients (75%, $n = 37$) were vitamin D deficient. The mean vitamin D level for female was 43.42 nmol/L and male was 63.64 nmol/L. Female patients also had higher risk for cardiovascular and progression of chronic kidney disease with hsCRP (4.60 mg/L) and proteinuria (UACR, 0.50 g/g).

After six months therapy, no significant changes in hsCRP and UACR were observed with oral alfacalcidol 0.25 μg daily compared to control group ($P = 0.963$ and $P = 0.841$). Subgroup analysis based on vitamin D status and gender also did not show any significant changes in hsCRP and UACR with oral alfacalcidol 0.25 μg daily compared to control group.

Conclusion : There was high prevalence of vitamin D deficiency among type 2 diabetes patient with nephropathy (82%). Low dose 0.25 mcg daily alfacalcidol had no significant effect on inflammation (hsCRP) and proteinuria in type 2 diabetic patients with nephropathy. Further study is required to confirm this finding using variable dose of alfacalcidol.

Supervisor:

Dr Azreen Syazril Adnan

Co-supervisor:

Associate Professor Dr Aida Hanum Ghulam Rasool

LONG TERM ANTIEPILEPTIC DRUGS AND ELECTROPHYSIOLOGICAL ABNORMALITIES

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Introduction: Prolonged administration of antiepileptic drugs (AEDs) is associated with peripheral neuropathy. Detection of subclinical peripheral neuropathy by means of electrophysiological studies is a well recognized phenomenon.

Objectives: The study aims to look at the possible subclinical effects of long term AEDs on the peripheral nerves in terms of its prevalence, characteristics of

electrophysiological abnormalities, and possible associations for the electrophysiological abnormalities and treatment durations.

Methods: The study was a cross-sectional study performed from January till April 2012 in HUSM. 105 adult epilepsy patients, who were on AEDs either CBZ, PHY, LTG, SVA, LEV, and TOP (single or combination therapy) for at least five years, were enrolled. All the patients had no clinical symptoms as to suggest peripheral neuropathy. Electrophysiological studies of right upper and lower limb were performed by a trained technician and partly by student, employing standard methods and the results were validated by a neurologist. The variables obtained were analyzed for prevalence and types of electrophysiological abnormalities. Chi-square test (and Fisher exact test where applicable) were used to evaluate the associations between demographic data, treatment methods, AED types and treatment durations with electrophysiological findings. These statistical methods were also employed to determine the effects of AED types on the electrophysiological abnormalities and durations of treatment.

Results: Out of the 170 subjects screened, 105 were enrolled in the study. The prevalence of electrophysiological abnormalities seen was 52.4% (95% CI 0.42, 0.62). The types of electrophysiological abnormalities observed were (i) reduction of Sensory Nerve Action Potential (SNAP) amplitudes followed by prolonged distal latency (DL) (ii) axonal type of neuropathy (iii) sensory-motor functional abnormalities. A significant association was noted between LTG monotherapy and electrophysiological findings ($P = 0.034$). Demographic data, treatment methods and treatment durations had no influences on the electrophysiological findings ($P > 0.05$). Types of AED had no effects on the electrophysiological abnormalities ($P > 0.05$). PHY and LTG therapy were significantly associated with the treatment durations in this study ($P = 0.035$ and $P = 0.001$ consecutively). Yet, no associations were seen between abnormal electrophysiological function and the treatment durations in the subgroup analysis of subjects on PHY.

Conclusion: Subclinical peripheral neuropathy was prevalent in our study populations. Reductions of SNAP amplitudes, axonal neuropathy and sensory-motor functions were primary electrophysiological abnormalities observed in our study. LTG monotherapy exerted lesser effect on peripheral nerves. There were no associations between demographic data, treatment methods and durations of treatment with electrophysiological findings. AED types had no effects on the electrophysiological abnormalities. PHY and LTG treatment showed associations with durations of treatments. We recommend a prospective study with larger sample size looking into AED's compliance, drug level, nerve biopsy and also the genetic aspects for further evaluation of chronic AED effects on the peripheral nerves.

Supervisor:

Dr Shalini Bhaskar

Co-supervisor:

Dr Sanisah Abd Halim

A COMPARATIVE STUDY OF QUALITY OF LIFE IN PATIENTS WITH CONTROLLED VERSUS UNCONTROLLED VENTRICULAR RATE IN ATRIAL FIBRILLATION

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Background: Atrial Fibrillation (AF) is the most common persistent cardiac arrhythmia. The impact on quality of life (QOL) is huge and much has been related to the achieved ventricular rate. The purpose of this study is to compare the outcomes of QOL based on the SF-36v2 questionnaire between two groups of AF patients with controlled versus uncontrolled ventricular rate.

Methods: A cross-sectional study was done on AF patients attending INR clinic, HUSM. Patients were given date for 24 hours Holter (Holter) fixation. Clinical data were obtained by interview and folder review. Their mean 24 hours ventricular rates from the Holter recordings were compared to the heart rate obtained by manual palpation in the clinic. Patients divided into 2 groups-controlled and uncontrolled ventricular rate based on the Holter mean heart rate of ≤ 80 bpm. SF-36v2 scores were used to compare the QOL between the 2 groups. The influence of clinical data on the ventricular rate was also reviewed.

Results: A total of 140 patients successfully completed the Holter recordings. The proportion of controlled ventricular rate obtained by Holter was 68.6%. The mean 24 hours rate for the controlled and uncontrolled groups were 70 (8) bpm and 91(9) bpm respectively. The difference between heart rate obtained by manual palpation and Holter was not significant [mean rate 78 (11) bpm and 76 (13) bpm respectively ($P = 0.257$)]. The difference in QOL scores were not significant between the 2 groups ($P = 0.786$). There were significant difference noted on types of AF ($P = 0.001$), weight; 64.3 (21.3) kg vs. 74.9 (19.9) kg; $P = 0.006$; diastolic BP ;72.5 (12.4) mmHg vs. 80.4 (11.8) mmHg; $P = 0.001$ respectively ;percentage of AF recorded by Holter ($P < 0.001$) and the longest duration of R-R peak interval ($P = 0.009$) on the ventricular rate. Only weight and percentage of AF were significantly associated with uncontrolled AF by multivariable analysis. [Adjusted OR of 1.027 (1.008, 1.041) and 1.022 (1.009, 1.035) respectively].

Conclusion: The proportion of controlled ventricular heart rate was 68.6% which was comparable with the previous major studies. Ventricular rate by manual palpation in the outpatient clinic was not different from the 24 hours Holter. Body weight (kg) and percentage of AF from 24 hours Holter were found to be associated with uncontrolled ventricular rate. The study has provided evidence that targeting heart rate of ≤ 80 bpm in AF does not show significant improvement in QOL among chronic AF patients attending HUSM INR clinic.

The findings may support the use of lenient heart rate (< 110 bpm) in managing chronic and stable AF patients.

Supervisor:

Associate Professor Dato' Zurkurnai Yusof

Co-supervisors:

Dr Ng Seng Ng Loong

Professor Syed Hateem Noor

A STUDY OF THE RELATIONSHIP OF PRESENTING SYMPTOMS OF COLORECTAL CANCER TO THE LOCATION OF THE TUMOUR IN HOSPITAL USM FROM 1996 TO 2009

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Introduction: The National Cancer Registry of Malaysia 2003 reported that colorectal cancer ranks as the third most common cancer for both men and women. While recent studies from Japan and Korea have shown not only high incidence rates but also an increasing trend among Asian population. The complexity surrounding identification of those patients requiring further investigation has led to the production of guidelines in many countries, all with the aim of encouraging earlier diagnosis of colorectal cancer. However delay in the diagnosis of colorectal cancer is still common. This delay is attributable to a variety of causes like, patient's delay in addressing the doctor and the general practitioner's delay in correctly identifying patient's symptoms.

Objective: Study the relationship of colorectal cancer presenting symptoms to the location of the tumour

Methods: A total of 212 patients data, diagnosed with colorectal cancer over a fourteen years period from 1996 to 2009 in Hospital Universiti Sains Malaysia were collected and observed. We studied the relationship of presenting symptoms to the location of the tumour, beside the demographic data epidemiology and SPSS program version 18.0 was used for data analysis.

Result: Most of the patients with colorectal cancer are more than 50 years old, and there is male predominance when compared with the female group in this study. However, there is no significant relationship between age and sex to the anatomical location of the tumour (P value > 0.05), while there is a strong relationship between the presenting symptoms and the location of the colorectal cancer (P value < 0.001). However abdominal pain does not follow this role as it is mostly associated with other presenting symptoms like intestinal obstruction or abdominal mass rather than be monosymptomatic for colon cancer. Beside; this symptom has no significant relation to the anatomical location of the tumour (P value > 0.05).

Conclusion: There is strong relationship between most of the presenting symptoms and the location of the colorectal cancer.

Supervisor:
Dr Zainal Mahmood
Co-supervisor:
Dr Leow Voon Meng

ENDOSCOPIC ULTRASOUND: CLINICAL IMPACT IN THE MANAGEMENT OF CHOLEDOCHOLITHIASIS IN HOSPITAL RAJA PERMAISURI BAINUN, IPOH PERAK FROM 2009 TO 2011

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Introduction: Cholelithiasis can never be confirmed based on clinical or biochemical parameters alone. Cholangiography (ERCP or intraoperative cholangiogram) is the gold standard procedure to diagnose cholelithiasis. However, ERCP is associated with significant risks and complications. The aim of this study is to assess the accuracy of endoscopic ultrasound (EUS) in detecting cholelithiasis in patients suspected to have common bile duct stones.

Methods: One hundred and fifty three patients with underlying gallstone disease, who were suspected to have cholelithiasis based on clinical, biochemical and radiological parameters, were included in the study. Thirty three patients were excluded leaving one hundred and twenty patients for analysis. All patients underwent EUS. EUS positive patients underwent ERCP while EUS negative patients underwent laparoscopic cholecystectomy with intraoperative cholangiogram. Concordance between EUS and ERCP or intraoperative cholangiogram was assessed.

Result: The sensitivity, specificity, positive predictive value, and negative predictive value of EUS in detecting cholelithiasis were 96.5%, 88.9%, 88.7%, and 96.6% respectively. The overall accuracy of EUS was 92.5%. EUS was safe to perform with no complications occurring following EUS. Two patients (3.2%) developed post-ERCP pancreatitis. Overall, EUS resulted in a 47.5% reduction of ERCP and thus ERCP with its potential complications were avoided.

Conclusion: In patients suspected to have cholelithiasis, EUS was safe and accurate to perform and avoided unnecessary ERCP.

Supervisors:
Dr Yan Yang Wai
Dr Mohd Ridzuan Abdul Samad
Co-supervisor:
Dr Chan Ching Phing

OUTCOME OF STAGE III COLORECTAL CANCER PATIENTS WHO HAVE RECEIVED ADJUVANT CHEMOTHERAPY IN HOSPITAL SULTANAH NUR ZAHIRAH AND HOSPITAL UNIVERSITI SAINS MALAYSIA FROM YEAR 1995 TO YEAR 2005

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Introduction: Colorectal cancer is among the leading causes of cancer related morbidity and mortality in Malaysia. It is the second most common cancer death after breast in Malaysia. In general, cancer of the large bowel is a disease of old age, with more than 80% of cases arising in those aged more than 60 years. The incidence is equal between genders up to the age of 40 years, but higher in male in older group.

Objectives: The purpose of the study to evaluate and compare the response of adjuvant chemotherapy on the stage III colorectal carcinoma patients in Hospital Sultanah Nur Zahirah and Hospital Universiti Sains Malaysia from year 1995 to year 2005 in terms of overall survival, survival without recurrence, and time to recurrence base on biochemical and clinical parameters.

Methods: A retrospective study which was conducted from year 1995 to year 2005. It involved patients who were diagnosed colorectal carcinoma stage III and treated with adjuvant chemotherapy in Hospital Sultanah Nur Zahirah and Hospital Universiti Sains Malaysia. Data were collected from the patient's case notes, retrieved from the Hospital Sultanah Nur Zahirah and Universiti Sains Malaysia record office.

Results: From 142 patients for the study, 20 were ineligible because of incomplete the treatment and defaulted follow-up. Overall survival showed better in HUSM group; 63.3% compared to HSNZ; 56.5% and statically significant. The disease free survivals were 51.7% in HUSM and 43.5% in HSNZ. Recurrence free interval in HUSM less compare to HSNZ. The median time for RFI in HUSM was three months compare to HSNZ four months. The commonest site for the recurrence of colorectal cancer was the liver 25.4%. In HUSM, 29.9% of recurrence was picked up through serial CEA monitoring compared to HSNZ; 2.9%. On the other hand, in HSNZ 48.6% of recurrence was picked up through periodic ultrasonography compared to HUSM; 14.8%. Only 18.5% in HUSM and 17.1% HSNZ presented with clinical symptoms of recurrence.

Conclusion: The result of this study demonstrated the better outcome of the stage III colorectal carcinoma patients who were received adjuvant chemotherapy in HUSM compare to HSNZ. This may be due to different managing team, where in HUSM, it involves oncologist, while in HSNZ all patients were managed by general surgeon. For post-op stage III colorectal cancer patients should be managed by

multidisciplinary team, involving oncologist. In the place where no resident oncologist available likes HSNZ, their opinion should be sought.

Supervisor:

Dr Mohd Nor Gohar Rahman

Co-supervisors:

Dr Ahmad Mardzuki Ibrahim

Dr Zaidi Zakaria

Associate Professor Dr Biswa Mohan Biswal

THE RELEVANCE OF ROCKALL SCORING SYSTEM FOR PREDICTING OF OUTCOMES IN PATIENTS WITH NON-VARICEAL UPPER GASTROINTESTINAL BLEEDING IN HUSM

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Introduction: Non-variceal upper gastrointestinal bleeding constitutes more than 50% among all upper gastrointestinal bleeding admission to surgical unit. Although bleeding ceases spontaneously in at least 80% of cases, a subgroup of patients either continues to bleed or re-bled at a later time, and this is associated with increased mortality.

Objective: The aim of this study is to assess the ability of the Rockall score to predict outcome in patients who undergo endoscopic therapy for non variceal upper gastrointestinal bleeding in Hospital Universiti Sains Malaysia.

Method: A retrospective analysis from 1st January 2009 to 31st December 2010 (2 years period) in a single referral centre, Hospital Universiti Sains Malaysia, Kubang Kerian. Rockall score was applied accordingly. Progress of patient including re-bleeding, surgery performed and mortality were recorded.

Results: A total of 251 patients were submitted into the study. Majorities were Malay (67.7%) followed by Chinese (24.7%), Indian (3.6%) and other races. Mean age was 59.6 years old; with 55.0% were from the age group of 60–79 years old; 39.4% were less than 60 and only 14 (5.6%) patients were more than 80 years old. Mean hospital stay was 5 days. Peptic ulcer disease constitutes 59% of the etiology of the bleeding. One third of the patients needed endoscopic hemostasis (29.5%). 23 patients or 9.2% rebleed and 19 patients (7.6%) died. About 9.6% or 24 patients underwent surgical intervention which was under running of a bleeding ulcer in the majority of the cases. A mean Rockall score for patients who did not rebleed was 4.14; compared to those who rebled was 6.43. Similar mean score in those who died was 6.74; compared to those who survive was 4.16. Both values were statistically significant ($P < 0.005$). Total score further divided into 3 groups and further evaluated with χ^2 . Majority of the patients who rebled had a higher score; 47.8%

(11 patients) with range of score 5–6 and 43.5% (10 patients) were more than 7 points. The remaining two patients belong to low score's group (8.7%). Similar figures were observed in a deceased group where all patients were from the intermediate and high score; 52.6% (10 patients) and 47.4% (9 patients).

Conclusion: Rockall scoring system is significant to predict re-bleeding and mortality as well as in triaging patients with non-variceal upper gastrointestinal bleeding and can be applied among these patients presented to HUSM.

Supervisor:

Dr Mohamed Ashraf Mohamad Daud

Co-supervisors:

Dr Ikhwan Sani Mohamed

Dr Andee Dzulkarnaen Zakaria

EVALUATION OF CAPTOPRIL AND NIFEDIPINE IN TREATMENT OF HYPERTENSION SECONDARY TO POST-STREPTOCOCCAL ACUTE GLOMERULONEPHRTIS – A RANDOMIZED CONTROL TRIAL

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Introduction: Post-streptococcal Acute Glomerulonephritis (PSAGN) is still common in Malaysia. Hypertension is one of its main complications which can lead to severe morbidity in children. Conventional method in treating hypertension in these patients was to use nifedipine to reduce the blood pressure. Recent study in the pathophysiology of the disease had shown apart from water and sodium retention, inappropriate production of angiotensin II could also contributes to the development of hypertension. Captopril, an angiotensin converting enzyme inhibitor can help to reduce the production of angiotensin II which can cause blood pressure reduction.

Objective: To compare the effectiveness of captopril versus nifedipine in controlling blood pressure in children with PSAGN with hypertension.

Methods: This was a double blinded randomized controlled trial, registered with ANZCTR (Trial No: ACTRN12611000778987) All children admitted to Wad 6 Selatan HUSM diagnosed clinically with PSAGN with hypertension during a one year study period are eligible for the study. Subjects were randomized either to receive nifedipine (control) or captopril (intervention). Outcomes measured are blood pressure changed in the first four hours and blood pressure changes until day three of starting the medication, duration of days to achieve blood pressure control, total duration of admission and the need to use additional medication. Blood urea and serum creatinine levels are compared from before starting treatment and at day three

after starting treatment.

Results: Out of 40 patients who were recruited and randomized, only 19 from the nifedipine treatment group and 13 from the captopril treatment group completed the study. Both treatment groups had no difference in their baseline data. Nifedipine produces a more significant reduction in SBP and DBP compared to captopril in the first 4 hours of starting treatment (SBP $P = 0.001$, DBP $P = 0.016$). There was no difference in reduction of SBP and DBP after 8 hours of treatment between the groups (SBP $P = 0.630$, DBP $P = 0.497$). There were no significant differences in the duration of blood pressure normalization (nifedipine: 2.7 days, captopril 2.9 days, $P = 0.803$) and duration of admission (nifedipine: 6.9 days, captopril: 5.4 days; $P = 0.183$) and the need for additional medication to control the blood pressure ($P = 0.32$) between the groups. Changes of blood urea and serum creatinine levels were not significant before and after treatment (Blood urea changes, $P = 0.564$; serum creatinine changes, $P = 0.236$).

Conclusion: Nifedipine produces more significant blood pressure reduction in SBP and DBP in the first four hours of starting treatment.

Supervisor:

Dr Mohd Ikram bin Ilias

Co-supervisors:

Professor Dr Hans Amin van Rostenberghe

Associate Professor Dr Nik Zainal Abidin Nik Ismail

LEFT VENTRICULAR MASS (LVM) AND LEFT VENTRICULAR MASS INDEX (LVMI) IN NORMAL MALAY PRIMARY SCHOOL CHILDREN

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Introduction: Left ventricular mass (LVM) and Left ventricular mass Index (LVMI) are two parameters that are considered important in predicting the outcomes of cardiovascular diseases in adults. Even though there are a lot of interest in the problem of left ventricular hypertrophy in children, there is relatively little published data on normal values of the left ventricular mass (LVM) during the developmental age.

Objectives: The aims of this study were to create a pilot percentile chart for LVM and LVMI in normal Malay Primary school children based on age, gender, weight, height, body surface area (BSA) and body mass index (BMI), and to explore relationship between LVM and LVMI with clinical parameters and echocardiograph parameters (Aortic root diameter, aortic isthmus, aortic arch, MV annulus and left atrium) in normal Malay primary school children.

Methods: A cross-sectional study was conducted from October to November, 2009 at Sekolah Kebangsaan Lundang,

Kota Bharu. Normal primary school children from pre-school, Standard 2, 4, and 6 were included in this study. A set of questionnaires and consent were obtained from parents prior to the examination. Physical examination, weight, height, blood pressure and echocardiogram measurements were recorded. LVM measurement was calculated by echocardiogram machine and LVMI was calculated by dividing LVM to height in meter power of 2.7 (LVM/height 2.7). Percentile charts were created from the data available according to age, weight, height, BSA and BMI. The factors affecting LVM and LVMI were identified using simple linear regression (SLR). Multiple linear regressions (MLR) was performed to determine the final model affecting LVM and LVMI.

Results: The most acceptable percentile chart in our study was percentile chart according to age. Factors affecting LVM were age, weight, height, BMI, BSA, and SBP. While factors affecting LVMI were age, weight, height, and BSA. Echocardiogram measurements found that aortic root, aortic arch, and MV annulus affect LVM, whereas aortic root (annulus), aortic arch, Left atrium and MV annulus affect LVMI. From multiple linear regressions, we identified that weight and SBP had strong correlation with LVM while age, SBP, and height had strong correlation with LVMI.

Conclusion: We have provided a pilot percentile chart for LVM and LVMI of normal school children between aged 5 to 12 years old but larger sample size would be able to produce a better percentile chart. LVM was most affected by weight and SBP whereas LVMI were affected by age, SBP and height. We provided a formula to estimate the LVM ($r^2 = 0.24$) and LVMI ($r^2 = 0.40$) with standard error of 22.97 and 13.74. The formula as below:

- $LVM (g) = -6.81 + 1.05 (\text{weight in kg}) + 0.42 (\text{SBP in mmHg})$.
- $LVMI = 94.23 + 1.87 (\text{age in years}) - 80.32 (\text{height in meters}) + 0.26 (\text{SBP})$.

Supervisor:

Associate Professor Dr Wan Pauzi Wan Ibrahim

Co-supervisors:

Dr Mohd Rizal Mohd Zain

Associate Professor Dr Arifin Nasir

IMAGERY-INDUCED RELAXATION AS A PSYCHOLOGICAL INTERVENTION TOOL IN CHILDREN WITH CANCER. A PILOT STUDY

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Introduction: Psychologically- directed therapies have been shown to be effective in reducing stress and enhance well-being. The aim of our study was to develop an

imagery-induced relaxation (IIR) audio in Bahasa Malaysia as an interventional psychological tool and pilot test it to our paediatric oncology patients in the hope to improve the patient's well-being as a whole.

Methods: Eighteen cancer children were recruited for this pilot study. The imagery-induced relaxation (IIR) tool was developed where face and content validation were obtained via reports from experts. An interventional study was conducted to look at the effect of the IIR audio in modifying the physiological and mood indicators as well as the quality of life score in children with cancer. The quality of life scores were measured using PedsQL 4.0 Generic Core Scale and PedsQL 3.0 Cancer Module. The physiological relaxation indicators were measured using self-constructed rating scale. Mood and pain were measured using the Ottawa-Georgia Mood Faces Scale and Wong-Baker Pain analog scale. Multiple comparison between the pre- and post-intervention was analysed with Friedman test with Bonferroni correction to detect the differences in indicators score across over time.

Results: There were no significant differences in the quality of life score. However the differences in all the physiological indicators; calmness of heart beats ($\chi^2 (4) = 21.02, P < 0.001$), feeling of comfortness ($\chi^2 (4) = 24.80, P < 0.001$), perception of no pain ($\chi^2 (4) = 16.20, P = 0.003$) and feeling of perceived strength ($\chi^2 = 17.50, p = 0.002$), mood; stress ($\chi^2 (4) = 17.731, P = 0.001$), sad ($\chi^2 (4) = 13.522, P = 0.009$), anxiety ($\chi^2 (4) = 12.290, P = 0.015$) and anger ($\chi^2 = 16.905, P = 0.002$) and pain ($\chi^2 (4) = 9.882, P = 0.042$) between time (pre- and post-intervention) were significant. The mean rank for all the indicators showed improvement with time indicating better physiological response, mood and less pain.

Conclusion: This study has successfully become a pioneer in developing an imagery induced relaxation audio in Bahasa Malaysia which is feasible and enjoyable by children. The imagery induced relaxation audio has also shown potential benefit in inducing positive effects on physiological indicators of relaxation, mood, and pain in cancer children. Future randomized controlled trials are needed to confirm our findings.

Supervisor:

Associate Professor Dr Ariffin Nasir

Co-supervisor:

Dr Azizah Othman

A PILOT STUDY TO DETERMINE THE INCIDENCE OF ANAEMIA, IRON DEFICIENCY AND IRON DEFICIENCY ANAEMIA AMONGST MALNOURISHED CHILDREN IN KOTA BHARU, KELANTAN

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Introduction: Iron deficiency anaemia (IDA) can no longer be considered as a simple anaemia readily reversed by iron therapy. It had been associated with behavioural abnormalities and developmental delay. The presence of iron deficiency in malnourished children poses additional threat and a double burden to the child concerned. Therefore, we need the prevalence figures to estimate the magnitude of iron deficiency amongst the malnourished children so it will help us to formulate preventive strategies.

Objectives: The main objective of this study is to determine the incidence of anaemia, iron deficiency and iron deficiency anaemia amongst severely malnourished children aged 6 month to 60 month in Kota Bharu, Kelantan through a pilot study. We also want to identify risk factors associated with iron deficiency anaemia (IDA) among malnourished children and to determine validity of pallor of conjunctiva in the assessment of anaemia.

Methods: A pilot study was conducted from January 2009 to December 2010 involving 70 severe malnourished children (defined as weight-for-age less than -3 Z-score) aged from 6 to 60 months, identified from the primary study, in 12 Klinik Kesihatan in Kota Bharu, Kelantan. Children with chronic diseases, thalassaemia, or acute infection during clinic visit were excluded from study.

Parents were interviewed using standard pro-forma containing information regarding demographic data, dietary history and social economic influences. Pallor of conjunctiva was examined and noted. Blood samples were taken after obtaining verbal consent and processed for full blood count and serum ferritin level. The possible risk factors for IDA were compared and analysed using bivariate analysis and simple linear regression.

Results: Amongst 70 children studied, 24.3% (95% CI: 14.2–34.3%) were anaemic (Hb < 11.0 g/dL). The prevalence of ID and IDA were 21.4% (95% CI: 11.8–31%) and 11.4% (95% CI: 4–18.9%) respectively. None of the risk factors were significantly associated with IDA. The sensitivity and specificity of pallor in detecting Hb less than 11.0 g/dL were 47.1% and 68.8% respectively.

Conclusion: The incidence of anaemia, iron deficiency and iron deficiency anaemia in malnourished children is high. There are no significant association of risk factors with IDA determined in this pilot study. Pallor of conjunctiva is not a sensitive or specific indicator for anaemia. Thus a larger study is required to determine the depth of the problems in the malnourished children by exploring the possibility of non nutritional causes of malnutrition.

Supervisor:

Professor Zabidi Azhar Hussin

A RANDOMISED DOUBLE BLIND CONTROLLED TRIAL OF EFFECTIVENESS OF SINGLE HIGHER DOSE OF DEXAMETHASONE FOR EXTUBATION IN HIGH RISK NEWBORN INFANTS

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Introduction: Pressure or irritation from the endotracheal tube lead to reactive edema in the glottic or subglottic mucosa. Steroids may offer protection or treatment by virtue of their anti-inflammatory actions. Many have used them on anecdotal basis due to the heterogeneity of previous studies including differences in dosages, frequencies, and timing of serving dexamethasone, plus no strict definition of inclusion criteria (high or low risk participants). So far, there were no studies evaluating the effect of single higher dose dexamethasone at 0.5 mg/kg in high risk infants for prevention of airway oedema.

Objectives: The aims of the study were to determine the effectiveness of a single higher dose dexamethasone for the prevention of post-extubation airway complications in neonates by comparing the reintubation rate, post-extubation stridor rate between dexamethasone group (dexa group), and placebo group. The side effects of dexamethasone in the study group were also described.

Methods: A total of 111 infants mechanically ventilated who fulfilled the inclusion criteria for high risk group were randomly divided into two groups: dexa ($n = 57$) and placebo ($n = 54$) to receive either intravenous dexamethasone phosphate 0.5 mg/kg or 0.9% saline three hours prior to extubation. Outcome measures include reintubation rate, post-extubation stridor and side effects of dexamethasone.

Results: There were no significant differences between the two groups in terms of baseline data. During the study, only ten (9.0%) infants required reintubation. Six infants that required reintubation were in the dexa group and the other 4 were from the placebo group. There were no significant differences between the groups in terms of reintubation rate, $P = 0.743$. No infants in the dexa group required reintubation secondary to upper airway compared to 3 infants in the placebo group ($P = 0.112$, RR 0.14 95% CI 0.01, 2.56 ARR 0.06 95% CI -0.03, 0.15 NNT 18 95% CI -41,7). During the study, 13 (11.7%) infants developed stridor after extubation, 4 infants were from dexa group and 9 infants from placebo group ($P = 0.114$, RR 0.42 95% CI 0.14, 1.29 ARR 0.10 95% CI 0.03, 0.22 NNT 10 95% CI -37,4). There were no significant side effects of dexamethasone.

Conclusion: This study showed no reduction in need for reintubation for any cause by using single dose dexamethasone at 0.5 mg/kg given three hours pre-extubation in high risk neonates. However there was at least a trend towards a reduction in signs of upper airway obstruction post extubation and a trend towards reduction in need for intubation due to upper airway obstruction in the intervention group. If these trends are confirmed by a larger study or meta-analysis of multiple similar studies, this could mean that the use of a single dose of dexamethasone pre-extubation

is beneficial for high risk neonates to reduce upper airway complications.

Supervisor:

Associate Professor Dr Noraida Ramli

Co-supervisors:

Professor Dr Amin Hans Van Rostenberghe

Professor Dr Quah Ban Seng

CHILDREN WITH VESICoureTERIC REFLUX IN HOSPITAL UNIVERSITI SAINS MALAYSIA: A 12 YEARS REVIEW

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Introduction: Vesicoureteric reflux (VUR) is the retrograde passage of urine from the bladder into the upper urinary tract. Thirty percent of children with VUR complicated with hypertension, growth failure and chronic kidney disease (CKD). There is no study regarding prevalence, demographic profile, complication, outcome and associated risks factors with VUR been done or published locally at present.

Objectives: To study demographic characteristics in children with VUR, to determine the survival analysis of children with VUR in relation to development of renal failure, to identify the predictive factor for development of renal failure and associated factor with high grade VUR.

Methods: The protocol for the study was approved by the USM Research Ethics Committee (Human) in April 2009. This is a retrospective study of all children diagnosed with VUR treated from paediatrics wards and clinics. Children whose medical records were not able to be traced and patient who has underlying chronic disease such as SLE, Nephrotic Syndrome, and children on chemotherapy medications were excluded from the study. Informed consent was obtained from the subjects after full explanation of the study procedure.

Results: Forty-five children had VUR. The mean age of presentation was 1.3(0.66) years old. Majority of them were boys (30, 66.7%). Twenty-two children (48.9%) had bilateral VUR. Thirty-one children (68.9%) had high grade VUR. VUR were complicated with recurrence UTI (24, 53.3%) and renal failure (14, 31.1%). The median survival time for the children in the high grade VUR group to develop renal failure was eight years. Presence of bilateral VUR was found to be significantly associated with renal failure after adjusting for gender, presence of UTI, income and education [OR (95% CI): P value: 5.7 (1.22, 26.33): $P = 0.027$]. Presence of recurrence UTI ($P = 0.020$) and age presentation of VUR less than one year old ($P = 0.033$) were found to be significantly associated with high grade VUR after adjusting for gender, income and education level. There was a significant association between children with high grade VUR and degree of renal failure, where the

P value was 0.034.

Conclusion: Majority of our patient with vesicoureteric reflux in Hospital Universiti Sains Malaysia were of high grade reflux and potentially lead to renal failure. In our study, predictive factor for renal failure was bilateral VUR. However recurrent UTI and age presentation less than one year were predictive factors for high grade VUR. Early identification of risk factor and predictive factor for severe VUR is the first step before proceeding to appropriate diagnostic and therapeutic approach. We believe that this finding will help us to further improve our management but future prospective studies need to be done.

Supervisor:

Associate Professor Dr Nik Zainal Abidin

Co-supervisor:

Associate Professor Dr Ariffin Nasir

INTERVENTIONAL STUDY OF QUALITY OF LIFE OF THE DISABLED CHILDREN AT COMMUNITY BASED REHABILITATION CENTRE, KELANTAN

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Introduction: Disability and developmental delay in childhood have become more important health problems. Disabled children require special long-term care, treatment, or other services to be individually planned or coordinated. Thus, assessment of quality of life (QoL) gives voice to disabled children. One of the strategy to improve their QoL is community based rehabilitation centre (CBR) or known as "Pusat Dalam Komuniti" (PDK) in Malaysia.

Objectives: The aims of this study were to determine the QoL of the disabled children aged two to four years old and four to 18 years old at 19 CBR in Kelantan six months after intervention using Malay version parents proxy report of PedsQL Generic Core Scales 4.0 and to compare the mean difference between pre and post mean QOL score among those children.

Methods: This study was a community interventional study to determine QoL of the disabled children at 19 CBR in Kelantan following an intervention programme to CBR teachers. The disabilities include cerebral palsy, physical disabilities, visual and hearing impairment, mental retardation, down syndrome and learning disabilities.

Results: QoL of the disabled children aged two to four years old were reported to be good in emotional, social and psychosocial function, however following the intervention, only physical function showed a significant improvement ($P < 0.05$). For disabled children age more than 4 years, only emotional function were reported to be good (mean score = 57.1%), but following intervention, no improvement were

noted in all four domains i.e. physical, emotional, social, and school function.

Conclusion: CBR project could help to improve some aspect of QoL of the disabled children. The improvement of physical function in the young ones showed the importance of early intervention programme as being stressed by other study. However, other factors need to be study including family constraint, lack of parental support, poor socioeconomic status, emotional instability and other health co-morbid that may hasten the improvement of their QoL.

Supervisor:

Dr Salmi Abdul Razak

Co-supervisor:

Dr Mohd Ismail Ibrahim

A RANDOMISED CONTROL TRIAL ON 2 TYPES OF BOLUS FEEDING: 2 HOURLY VERSUS 3 HOURLY FEEDING IN PRE-MATURE INFANT

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Introduction: Optimal enteral feeding in pre-mature infant is very important as it has great impact on the neurocognitive outcomes of the baby. Many studies have focused on different aspect of feeding schedules; however no data available to show effect using different time intervals between single feedings.

Objective: To evaluate the effects between 3 hourly feeding and 2 hourly feeding in pre-term infants in NICU, HSNZ and HUSM, Kubang Kerian, Kelantan Malaysia.

Methods: This was a two-center, prospective, parallel, non-blinded randomized controlled trial. A total of 106 infants with the birth weight of 1 to 1.5 kg and less than 34 weeks gestation were randomized into 2 hourly or 3 hourly feeding. Primary outcome was to compare the mean difference in the duration of achieving full feeding (days). The secondary outcome was to compare the mean difference in the duration of regaining birth weight (days), incidence of necrotizing enterocolitis (NEC), feeding intolerance, the event of nosocomial sepsis, and the used of anti-reflux in each group.

Results: A total of 106 pre-mature infants were included in the study, 55 infants were randomized to the 3 hourly feeding (intervention group) and 51 infants to 2 hourly feeding (control group). However, only 48 infants for intervention group and 46 infants for control group were analyzed as per-protocol analysis. There were no significant differences between two groups in terms of baseline data except for birth weight and the duration of UAC. Infants in control group were significantly smaller and had a longer duration on UAC. The mean difference in the duration of achieving full feeding (days) was comparable in two groups (11.27 versus 10.24 days

respectively, P value = 0.245). The mean difference in the duration of regaining birth weight was also similar in both groups (12.77 versus 14.09, P value = 0.213). Other secondary outcomes included the highest bilirubin levels, duration on phototherapy, incidence of NEC, incidence of feeding intolerance and requiring of antireflux were not significant difference in between two groups. Subgroup analysis according to birth weight and appropriateness of birth weight to gestational age were not statistically significant. However, for infants more than 32 weeks gestation, infants in the intervention group were significantly earlier in regaining the birth weight (P = 0.022).

Conclusion: 3 hourly feeding were comparable with 2 hourly feeding without any evidence of increased adverse events.

Supervisor:

Dr Nor Rosidah Ibrahim

Co-supervisors:

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