

ROLE OF THE URATE TRANSPORTER SLC2A9 GENE IN SUSCEPTIBILITY TO GOUT IN MALAY PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Gout is the most common type of inflammatory arthritis affecting men and increasing in prevalence worldwide. The disease is due to high levels of uric acid and deposition of monosodium urate crystals present in joint and periarticular tissues. Several studies from genome-wide association have confirmed genetic contribution in renal excretion of uric acid. The solute transporter 2A9 (*SLC2A9*) which is expressed in the chondrocytes of human articular cartilage and peripheral leukocytes demonstrated to be a renal urate transporter which lead to gout development. To the best of our knowledge, this is the first study ever done in Malaysia providing data from other Asia Pacific Islanders.

Objectives: The aims of this study were to discover the association of genetic polymorphism in *SLC2A9* gene, which may unravel the molecular and biochemical mechanism to development of gout in Malay population. The specific objectives of the study were to test genetic associations of two common causal variants of this gene with gout in Malay patients in Hospital Universiti Sains Malaysia (HUSM) namely *rs16890979* and *rs11942223* and to correlate the association between serum uric acid level with these genetic variants in *SLC2A9* gene.

Methods: A comparative cross sectional study was conducted in Rheumatology Clinic, HUSM for a year starting from September 2011. DNAs were extracted from 50 cases and 52 controls Malay patients with consented approval using a commercialised extraction kit. *PCRFLP* was performed for two causal variants of *SLC2A9* that are assigned as *rs16890979* and *rs11942223*. Single association and haplotype association were analyzed using online SHEsis software based on Hardy-Weinberg Equilibrium using Chi-square calculation with 95% confidence interval (CI) and *P* value of < 0.05 is considered statistically significant.

Results: Single association analysis of *rs16890979* and *rs11942223* with gout gave a value of *P* = 0.31 and *P* = 0.40, OR = 1.61; %95 CI = 0.53-4.91, respectively. Even though *rs11942223* did not showed association with the disease, the minor allele of the SNP conferred a trend towards susceptibility. In addition, the study showed combination of common C-allele of *rs16890979* with variant C-allele of *rs11942223*

was statistically not significant. However the haplotypes analysis for both conferred a trend towards susceptibility (*P* = 0.432; OR = 1.533 95% CI = 0.524-4.484). No significant difference was found between both *SLC2A9* SNPs with level of uric acid. However for both SNPs, heterozygous genotype showed slightly higher in serum uric acid level compared to homozygous wildtype.

Conclusion: This study revealed there was no association of *rs16890979* and *rs11942223* with gout development in Malay patients in HUSM. The findings could be due to small sample size. Therefore a future cohort study with larger sample size is encouraged to look into these associations.

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A PRELIMINARY STUDY ON SELECTED HAEMOSTATIC MARKERS AND BLOOD CELL INDICES IN OBSTRUCTIVE SLEEP APNOEA

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Introduction: Obstructive sleep apnoea (OSA) is a common sleep disorder affecting the general population and is associated with various health co-morbidities including ischaemic heart disease, cerebrovascular accident and hypertension. Of interest is whether, these co-morbidities are related to the hypercoagulable state which is precipitated by the hypoxic events.

Objectives: The objective of this preliminary study was to compare the mean levels of selected haemostatic parameters and blood cell indices between OSA patients and the control group. We also aimed to study the haemostatic parameters among these OSA patients and the associations with the clinical severity according to AHI scoring index based on sleep study.

Methods: A prospective case control study was done for a period of seven months duration in Hospital Universiti Sains Malaysia (HUSM). A few selected haematological parameters were analyzed in the Haematology lab HUSM, including APTT, HCII, Activated Protein C-Resistance assay, von Willebrand assay, Factor VIII level, Haematocrit, haemoglobin level and

platelet count.

Results: A total of 15 OSA patients and 19 control subjects were recruited in this study according to the inclusion and exclusion criteria. The results showed that there were a statistically significant mean difference in the level of mean haemoglobin of patients with OSA; 15.51 (\pm 1.00) g/dL compared to the mean of control groups 13.91 (\pm 1.16) g/dL, ($P < 0.001$). Haematocrit value also showed significant mean difference between OSA and control group [control 41.96 (\pm 2.48) % and patients 44.70 (\pm 2.16) %, $P = 0.004$] using the independent t test. We also found that for HCII, there was a significance difference in mean between the control and the severe OSA groups (115.14 \pm 25.65% and 88.50 \pm 14.25 respectively $P = 0.01$) using the ANOVA test.

Conclusions: In view of higher mean level of haemoglobin and haematocrit values of the OSA patients compared to the control subjects, there is a possibility that OSA patients are more at higher risk for hyperviscosity compared to the non OSA population. These significant haemorrhological changes may have contributed to thromboembolic events (TE). Lower level of HCII had been previously reported as a risk factor for TE. In this study, lower level of HCII in severe OSA patients compared to the control group, indicates a possibility of higher risk of hypercoagulable state among OSA patient. This is the first report of low HCII among severe type of OSA patients requiring further study in future to confirm the contribution of this marker (HCII) towards a hypercoagulable state.

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CORD BLOOD SCREENING FOR THALASSEMIA AND HAEMOGLOBINOPATHIES IN KELANTAN : RESULTS FROM A SINGLE CENTRE STUDY

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Introduction: In Malaysia, the carrier rate for α -thalassemia is 1.8 to 7.5%, whereas the carrier rate for β -thalassemia is 3 to 5% and Hb E carrier rate account for 5 to 46% of the population as reported by Malaysian Thalassemia Registry in 2009. There has been limitation in making the diagnosis of thalassemia with the existing method, the high performance liquid chromatography (HPLC) as it requires special instrumentation and training and also results are in patterns that are relatively complex. By HPLC, the Hb E is not separated from Hb A2 thus resulting in uncertainty of making the diagnosis of Hb E and β -thalassemia. Capillary

electrophoresis (CE) has been introduced as an alternative tool capable of separating the normal haemoglobins accurately and also detecting major haemoglobin variants by alkaline electrophoresis on silica capillaries. Newborn screening for haemoglobinopathies has been recommended as a tool for morbidity prevention as well as for genetic counselling in the family of healthy carrier. Cord blood sampling is less invasive and more readily accepted by parents for screening purposes.

Objectives: The aims of this study were to make diagnostic assessment of thalassemia among newborns delivered in HUSM using capillary electrophoresis system (CE), to determine the prevalence of thalassemia among newborns, to determine the correlation of Hb A and Hb F between CE and HPLC and to assess the effectiveness of MCV, MCH, and Hb Bart's as screening methods for α -thalassemia in newborns.

Methods: A cross sectional study was done by collecting 300 cord blood samples from newborns delivered in HUSM during the study period. Consent was obtained from the mothers before delivery. The samples were tested for red cell indices (Hb, RBC, MCV and MCH). Haemoglobin analyses were performed using CE (Sebia CAPILLARYS2) and HPLC (Bio-Rad VARIANT II). DNA analyses were performed for α -SEA, α -3.7, and α -4.2 deletion.

Results: From 300 cord blood samples examined, α -thalassemia was detected in 29 (9.6%) newborns, Hb E was detected in 33 (11%), 2 of the newborns were having compound heterozygous for Hb E and α -thalassemia 2 ($\beta^E\beta/-3.7\alpha/\alpha\alpha$) and 1 (0.3%) was having Hb S. There was good correlation of CE and HPLC in measuring Hb A ($r = 0.828$) and Hb F ($r = 0.821$) as well as Hb A2 by HPLC and Hb E by CE ($r = 0.885$). The Hb, MCV and MCH were significantly lower in newborns with α -thalassemia 2 compared to normal newborns. The cut off value for MCH is 33.65pg and the cut off value for MCV is 101.65 fL for prediction of α -thalassemia 2 with sensitivity of 88.7% and 85.5% respectively.

Conclusions: From this study, we observed that CE could clearly demonstrate the presence of Hb E and Hb Bart's in newborns. CE is comparable to HPLC for measurement of haemoglobin fractions. This instrument could be one of the most powerful first line solution for haemoglobinopathies screening in newborns.

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EVALUATION OF ASSOCIATED RISK FACTORS FOR BLOOD TRANSFUSION IN PATIENT UNDERGOING CAESAREAN SECTION IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Transfusion of blood and blood products is the therapeutic option of choice in many medical emergencies and planned surgical procedures because transfusion can be life saving in situation of severe haemorrhage. However, a transfusion is not without a risk. There is always the possibility of side effects on adverse reactions to the transfused blood from mild reaction to the life threatening condition. The transfusion rate in caesarean section ranges between 1.1 – 7.8% in developed countries and up to 25% in developing countries. Therefore, in this study we want to find out know the prevalence of blood transfusion in caesarean section. The data would reflect current transfusion practice and might be useful in clinical counseling, preoperative planning and eventually reduces the risk of transfusion.

Objectives: The aim of this study is to determine the prevalence of blood transfusion in women undergoing cesarean section and to correlate the association risk factor for blood transfusion such as age, parity, indication of cesarean section, medical condition and intra operative complication.

Methods: This was a cross sectional study conducted in 670 pregnant women who underwent cesarean section in HUSM from June 2012 to April 2013. A comprehensive pre-designed proforma was filled in for each woman. Data related to social demographic characteristic, surgical events, indication of transfusion, estimated blood loss, intra operative complication, and the number of unit transfused were recorded and compared between women who received blood transfusion during caesarean section and women did not receive blood transfusion.

Results: The prevalence of blood transfusion in caesarean section was 6 %. The crossmatch transfusion ratio in this study was 1.1.3:1. After simple logistic regression (univariate) analysis the significant risk factors were gestational age, pre-haemoglobin levels, maternal medical history of anaemia and haemoglobinopathy, placenta previa, duration of cesarean section, total blood loss and intraoperative complication. After multiple regression logistic analysis factors, pre operative haemoglobin < 9.0 g/dL (OR 194.88, 95% CI 11.21 – 387.32), spinal anaesthesia (OR 10.65, 95% CI 1.48 – 76.63), blood loss more than 1000 mL (OR 25.8 95% CI 2.96–225.07) and intra operative complication such as uterine atony, uterine incision extension to other structure like vagina and bladder and hysterectomy (OR 92.46 95% CI 13.10–628.73) were found to be significantly associated with a higher risk for blood transfusion during caesarean section.

Conclusion: As a conclusion, the prevalence of blood transfusion in caesarean section in HUSM is low and comparable with other develop country. Thus, the adequate blood arrangement prior to caesarean section is only justified in those women with high risk factors for blood transfusion and risk for significant blood loss.

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INCIDENCE, RISK FACTORS AND OUTCOMES OF HOSPITAL ACQUIRED URINARY TRACT INFECTION IN ICU HOSPITAL SUNGAI BULOH

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Introduction: Healthcare associated infection (HCAI) is a localised or systemic condition due to infection that occurs 48-hours or more after patient being admitted to the hospital. HCAI is considered as a serious event in clinical settings and most of the time is preventable. Healthcare associated urinary tract infection (HCA-UTI) is the commonest type of HCAI. The risk factors that contribute to the development of HCA-UTI include the insertion of indwelling urinary catheter, duration of catheterisation, systemic antibiotics, female gender, age > 65 years old, serum creatinine > 2 mg/dL, diabetes mellitus and lack of aseptic techniques during insertion of urinary catheter. The clinical diagnosis might be difficult in view of the lack of signs and symptoms presented by patient with HCA-UTI. Laboratory analysis of the urine specimen may help in determining the diagnosis of HCA-UTI. The aim of this study is to determine the incidence, risk factors and outcomes of HCA-UTI in ICU Hospital Sungai Buloh.

Methods: This is a prospective cohort study which was conducted in ICU Hospital Sungai Buloh for duration of 6 months (September 2012 – February 2013). Urine specimens from participants were collected after 48 hours of admission to ICU and monitored until they discharged from ICU. The risk factors of each participant were studied and outcomes were observed.

Results: Among 677 admissions to ICU in September 2012 – February 2013, only 220 (32.5%) met the inclusion criteria. Only 21 patients had HCA-UTI thus the incidence of HCA-UTI in ICU Hospital Sungai Buloh was 9.5% (95% CI 5.6, 13.4). The associated risk factors were analysed using Multiple Logistic Regression model and showed only length of ICU stay (RR 1.07, 95%CI 1.03, 1.13, $P < 0.001$) was the significant risk factor to develop HCA-UTI in this study. The commonest microorganism isolated were *Candida albicans* (23.8%) and *Pseudomonas aeruginosa* (23.8%). Majority of patients with HCA-UTI were discharged stable and mortality was 33.3% overall.

Conclusion: HCA-UTI is a condition that usually overlooked by healthcare personnel. Prevention of the occurrence with proper measures and optimise catheter care

is important to minimise the rate of HCA-UTI in hospitals.

Supervisor:

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THE UTILITY OF TRANSDUCER-LIKE ENHANCER OF SPLIT 1 (TLE-1) EXPRESSION AS A DIAGNOSTIC IMMUNOHISTOCHEMICAL MARKER FOR SYNOVIAL SARCOMA AND ITS ASSOCIATION WITH MORPHOLOGICAL FEATURES

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Introduction: The roles of molecular studies have been widely taken up by immunohistochemistry due to its limited availability in the current practice. Many have regards immunohistochemistry as an excellent technique in aiding histopathological diagnosis. Synovial sarcoma, a malignant soft tissue sarcoma is defined by the translocation t(X;18) that produces the fusion oncogenes SYT-SSX. Due to limited molecular facilities, TLE-1, an immunohistochemical marker has emerged as an alternative for pathologist to guide them in differentiating synovial sarcoma from other histologic mimics. Objectives: This study was design to ascertain the usefulness of TLE-1 as a diagnostic immunohistochemical marker in HUSM. In relation to that, we also tried to associate the positive expression of TLE-1 with the histo-morphological features including comparing the positive expression of TLE-1 with other immunohistochemical markers commonly used in HUSM.

Methods: A cross sectional study was conducted on the 33 available cases in which 26 of them were synovial sarcoma and the remaining 7 of non-synovial sarcoma cases. Tissue sections retrieved from archived tissue blocks were stained with Hematoxylin and Eosin, followed by TLE-1, EMA, CK 7 and CD 34 immunohistochemical stains.

Results: In total, 84.6% (22/26) of synovial sarcoma cases were positive for TLE-1, in which 91.7% (11/12) were biphasic type, 83.3% (10/12) were monophasic type and 50% (1/2) poorly differentiated type. Of the non-synovial sarcoma cases, only 28.6% (2/7) cases were positive for TLE-1 ($P = 0.003$). EMA positivity was also showed significant difference with non synovial sarcoma cases ($P = 0.016$). Other markers CK AE1&3, CK 7 and CD 34 were not significant. The sensitivity of TLE-1 was higher than EMA (84.6% versus 76.9%) but shared similar specificity (71.4%), whereas the positive and negative predictive values were 91.7% and 55.6% respectively. The morphological features which were helpful to differentiate between synovial sarcoma and non-synovial sarcoma groups were the presence of both (spindle and epithelial) cells type,

not more than mild nuclear pleomorphism, alternating tumour cellularity, fascicular growth pattern and thick rosy collagen in stroma.

Conclusion: TLE-1 was highly expressed in synovial sarcoma cases and showed better sensitivity and fair specificity than other panel of immunohistochemical markers particularly EMA and CK 7, however, it is not a standalone immunohistochemical marker. There were certain morphological features although not pathognomonic, can be used to differentiate between synovial sarcoma and its histological mimics. In the absence of molecular studies, combination of clinical information, radiology and certain morphological features together with panel of immunohistochemistry markers especially positivity towards TLE-1 and keratin or EMA, would definitely offer a valuable tool in diagnosing synovial sarcoma.

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THE EXPRESSION OF INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-RELATED PROTEIN 1 (IGFBP-rP1) IN BREAST AND OVARIAN CARCINOMA IN PATIENT WITH AND WITHOUT DIABETES MELLITUS TYPE 2

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Introduction: World-wide, the prevalence of female cancers including breast, cervical, ovary and endometrial carcinoma is increasing in trend. The prevalence of Diabetes type 2 (DM2) is also increasing. However, such association is not known in Kelantan population, a state which has one of highest diabetes type 2 prevalence in Malaysia. Diabetes type 2 which characterized by chronic hyperinsulinemia will have indirect effect on promoting carcinogenesis via Insulin Like Growth Factor (IGF) system. Insulin Like Growth Factor Binding Protein-1 (IGFBP-rP1) is a member of IGF system that have high affinity to insulin receptor and lead to insulin resistance syndrome in human. This persistence hyperinsulinemia will further increased Insulin Like Growth Factor-1 (IGF-1) that can inhibit apoptosis and increased proliferation of damaged cell that lead to cancer formation.

Objective: The aim of this study is to determine the proportion of breast, ovary, endometrial, and cervical carcinoma in Hospital Universiti Sains Malaysia (HUSM) from 2000 to 2011 and the proportion of breast, ovary, endometrial, and cervical carcinoma in patients with known positive or negative for diabetes. We also determined the

association between IGFBP-rP1 protein expression in two selected cancers; breast and ovarian carcinoma.

Methods: Initial data on patients diagnosed with the four cancers was collected from the hospital record which was matched with data from computerised system in the pathology department. Only breast, ovarian, cervical, and endometrial carcinoma that have been diagnosed histologically in HUSM were included in this study. Referral cases outside Kelantan were excluded. Status of patients known positive for DM2 and known negative for DM2 were retrieved using patient's clinical record. We selected 2 cancers; breast and ovarian carcinoma to be stained with IGFBP-rP1 antibody by immunohistochemistry. Statistical analysis was performed using SPSS version 20.0. *P* value <0.05 was taken as statistically significant.

Result: A total of 860 cases of breasts, cervical, ovarian and endometrial carcinoma were diagnosed histologically from 2000–2011. The most common cancer as follow in descending order were; breast carcinoma; [437/860 (50.8%)], cervical carcinoma; [159/860 (18.5%)], ovarian carcinoma; [143/860 (16.6%)] and endometrial carcinoma; [121/860 (14.1%)]. Out of these, 26.5% (228/860) cases were known diabetics. Endometrial carcinoma patients showed the highest for being diabetic; [51/121 (42.1%)] followed by ovarian carcinoma; [37/143 (25.9%)], breast carcinoma; [103/437 (23.6%)] and cervical carcinoma; [37/159 (23.3%)]. Proportion of both breast and ovarian carcinoma known positive for DM2 were increasing in trend from year 2000–2011. The peak age of patient was 53.37 ± 11.96 (mean \pm SD) and majority was Malay. We found that breast and ovarian carcinoma with known positive for DM2 showed positive expression of IGFBP-rP1 with *p* value <0.001 compared to those without. Ovarian carcinoma cases with known positive for DM2 had 5.20 Adjusted OR (95% CI) to get positive IGFBP-rP1 expression compared to those known negative for DM2 with *P* value < 0.001.

Conclusion: Over the 11 years period, four female cancers in HUSM are showing a rising trend with breast cancer showing steeper in trend. We noted a strong association between breast and ovarian carcinoma with known positive for DM2 compared to those known negative for diabetes. Patients who were known positive for DM2 also had 5.20 Adjusted OR (95% CI) to get ovarian carcinoma compared to those known negative for DM2. This result support that chronic hyperinsulinemia indirectly promotes carcinogenesis via Insulin Like Growth Factor (IGF) system. Thus we conclude positive expression of IGFBP-rP1 might play an important role in carcinogenesis of breast and ovarian carcinoma to those with known positive for diabetes. This data strengthen the theory that diabetes type 2 is strongly associated with breast and ovarian carcinoma. Reduction in diabetes prevalence may reduce cancer incidence.

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THE ROLES OF ENDOTHELIAL CELL ADHESION MOLECULES AND ANTI-C1q ANTIBODY IN DIAGNOSING SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) AND MONITORING DISEASE ACTIVITY IN SLE

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Introduction: Several studies have investigated the potentials of endothelial cell adhesion molecules and anti-C1q antibody in systemic lupus erythematosus (SLE) disease monitoring. This study was undertaken to evaluate some inconsistent results of previous studies by looking at the correlation between these markers with SLE Disease Activity Index (SLEDAI) and the standards immunological markers for SLE disease monitoring (anti-dsDNA and complement). In addition, the roles of these markers in diagnosing SLE were also part of the interest.

Objectives: The aims of this study were to determine the differences between serum levels of ICAM-1, VCAM-1 and anti-C1q antibody in active SLE, non-active SLE and healthy controls; to determine the cut-off point and diagnostic accuracy of ICAM-1, VCAM-1 and anti-C1q antibody in diagnosing SLE; to determine the correlation between ICAM-1, VCAM-1 and anti-C1q antibody levels with SLE disease activity index (SLEDAI) and standard SLE disease activity immunological markers (anti-dsDNA, serum C3 and C4).

Methods: In this cross sectional study, sera of 95 SLE patients (45 active cases and 50 non-active cases) and 50 healthy controls were measured for serum levels of intercellular cell adhesion molecule 1 (ICAM-1), vascular cell adhesion molecule 1 (VCAM-1), and anti-C1q antibody using enzyme-linked immunosorbent assay (ELISA) kits. SLE disease activity was evaluated by SLEDAI score and active SLE cases were defined as those having SLEDAI score above five at the time of blood taking.

Results: Median VCAM-1 levels were significantly higher in active SLE compared to non-active SLE and control groups (34.53, IQR 25.83 vs 27.75, IQR 20.76 vs 14.09, IQR 25.12 ng/mL; *P* < 0.001). Median anti-C1q antibody levels were also significantly different between the three groups of active SLE (19.67, IQR 43.59 U/mL), non-active SLE (2.75, IQR 5.69 U/mL) and control (1.47, IQR 2.64 U/mL) with *P* < 0.001. ICAM-1 levels were higher in SLE patients but there was no significant difference between all the three groups. Cut-off value and diagnostic accuracy was determined by receiver operating characteristic (ROC) analysis. VCAM-1 and anti-C1q antibody were useful in diagnosing SLE. At cut-off value of 26.85 ng/ml, VCAM-1 was 63.1% sensitive and 80.0% specific; while anti-C1q antibody at cut-off value of 2.57 U/ml was 68.4% sensitive and 72.0% specific in differentiating SLE from healthy controls. VCAM-1 and anti-C1q antibody were also significantly correlated with SLEDAI score (*r* = 0.294, *p*

= 0.004; $r = 0.559$, $p < 0.001$), anti-dsDNA ($r = 0.226$, $P = 0.006$; $r = 0.511$, $P < 0.001$), serum C3 ($r = -0.183$, $P = 0.028$; $r = 0.420$, $P < 0.001$) and serum C4 ($r = -0.251$, $P = 0.002$; $r = -0.398$, $P < 0.001$) respectively. ICAM-1 level was not useful in differentiating SLE patients and healthy control and did not reflect disease activity in SLE.

Conclusion: Serum VCAM-1 and anti-C1q antibody were elevated in SLE patients compared to controls, with significantly higher levels seen in active compared to non-active SLE cases. Both VCAM-1 and anti-C1q antibody were useful in differentiating SLE patients from healthy controls as well as correlated with SLE disease activity and standard immunological tests for SLE disease monitoring (anti-dsDNA, serum C3 and C4). Therefore, VCAM-1 and anti-C1q antibody may serve as useful diagnostic tool and global activity markers for SLE.

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RECOMBINANT FACTOR VIIA OFF-LABEL USE IN MANAGING CRITICAL BLEEDS AMONG NON-HAEMOPHILIC PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA: CONTEXT OF USAGE, PATIENT CHARACTERISTICS AND OUTCOMES

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Introduction: The off-label use of activated recombinant factor VII (rFVIIa) for the treatment of haemorrhage in non-haemophilic patients is on the rise despite limited evidence supporting survival benefits and the risks of exposing patients to thromboembolic adverse events. Well-designed prospective randomised controlled trials have proven an ethical and technical challenge to conduct in view of the emergent way this drug is being used and its option as a 'last resort' in many critical settings.

Objective: Our objectives were to describe the prescribing practices and patient demographics for rFVIIa, analyse the efficacy and factors influencing efficacy, describe the incidence of adverse events particularly thromboembolic events and describe the survival of patients after rFVIIa administration.

Methods: This study was a retrospective observational chart audit. All patients who were prescribed rFVIIa within the period of 1 January 2008 to 31 December 2011 were included for chart audit aided by a case report form. Data collection included patient demographics, context of bleeding,

prescribing indications, rFVIIa doses, body temperature and pH, effect of rFVIIa on bleeding, haematological laboratory investigations, blood component transfusion, surgical intervention, adverse events and patient status up to discharge from hospital.

Results: 94% of rFVIIa was prescribed for an off-label indication in HUSM from 2008 to 2011. The primary indication was for the treatment of ongoing haemorrhage (78%) while the others were administered rFVIIa prophylactically to prevent bleeding. Most patients receiving rFVIIa were young (mean age 36.49 ± 19.54) and predominantly male (68%). Neurosurgery patients encompassed 67% of cases who were administered rFVIIa. Median dose of rFVIIa was $33.33 \mu\text{g/kg}$ (range $14.63\text{--}154.28 \mu\text{g/kg}$) and 95% of cases received only a single dose. rFVIIa was effective reduced bleeding in 62% of the cases. There was a significant reduction of INR ($P < 0.001$) but no reduction in aPTT ($P = 0.666$). A higher dose was not associated with better efficacy ($P = 0.615$). Hypothermia, acidosis and thrombocytopenia did not significantly impact the efficacy of rFVIIa. Only 1 thromboembolic event was noted out of a total of 7 adverse events. None of the adverse events were likely to be linked to rFVIIa administration. Adverse events were not associated with a higher dose of rFVIIa ($P = 0.417$). Overall 28-day mortality was 56%.

Conclusions: The off-label use of rFVIIa for the treatment of haemorrhage among non-haemophilic patients seems to provide a non-dose dependent reduction in bleeding and reduction in INR after a single dose without a high incidence of thromboembolic events. Certain contexts of bleeding such as post-partum haemorrhage have a better outcome than others.

Supervisor

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EFFECTIVENESS OF PROPHYLACTIC DEXAMETHASONE IN REDUCING THE INCIDENCE OF POSTOPERATIVE NAUSEA AND VOMITING IN PATIENTS UNDERGOING OTORHINOLARYNGOLOGY SURGERY IN PAEDIATRIC AGE GROUP

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Introduction: Post-operative nausea and vomiting (PONV) is a persistent true complication after general anaesthesia. Continuous efforts has been taken to reduce anaesthesia causes of PONV using different drugs and protocols. Dexamethasone is a known antiemetic for reducing PONV used alone or with other antiemetic medications. Different doses of dexamethasone has been tried in different

anaesthetic techniques for different surgical procedures.

Objective: It is our aim in our study to see the effectiveness of 0.1 mg/kg body weight prophylactic dexamethasone in reducing the incidence of PONV in patient undergoing otorhinolaryngology surgery in paediatric age group (3–18 years).

Methods: Prospective double blinded study of 84 paediatric patients undergoing elective otorhinolaryngology surgery were randomised into Group 1 and 2. After preoperative assessment and fasting for 6 hours, baseline monitoring with NIBP, HR, and SPO₂ is done. After pre-oxygenation patient was induced with IV Fentanyl 2 mcg/kg, IV Propofol 2 mg/kg, IV Rocuronium 0.9 mg/kg and was intubated. In Group 2 patient was given Dexamethasone 0.1 mg/kg, normal saline was given in Group 1 soon after induction. Anaesthesia was maintained with TIVA Propofol and oxygen in air (50-50), IV Fentanyl and IV Rocuronium. TIVA Propofol was given to maintain the target level of 3 mcg/mL. Intraoperative fluid therapy was given with ringer lactate to maintain haemodynamic. At the end of the operation, neuromuscular blockade was reversed with 0.05 mg/kg neostigmine and 0.02 mg/kg atropine at the flicker of respiration on ETCO₂ monitor. Standard precautions were taken for extubation and transfer to recovery room. Patient was monitored in recovery room for a period of half an hour. Haemodynamic parameters (SBP, DBP, MAP, HR, and SPO₂) and episode of postoperative nausea and vomiting was recorded. Rescue antiemetic was given using Metoclopramide 0.1 mg/kg IV as required. All episodes of PONV in the first 24 postoperative hours was evaluated at 1 hour, 2 hour, 2-6 hour, and 6–24 hour using a numeric scoring system for PONV by the well trained nurse aware of the study blinded to the group and to which the patient belonged. The scoring system used was : 0 = no nausea or vomiting, 1 = nausea but no vomiting, 2 = 1 vomiting episode in 30 min, 3 = persistent nausea (> 30 min) or 2 or more vomiting episode in 30 min. We did not assess for nausea in patients < 6 year of age. In older patients, nausea was assessed by an observer and by self report. Patient with a PONV score of 3 were treated with IV metoclopramide 0.1 mg/kg as a rescue antiemetic.

Results: There was no statistically significant difference in demographics between the two groups. Most of the patients had PONV in the first two hours postoperatively. 10 patients (23.80%) in group 2 using dexamethasone 0.1 mg/kg had PONV compared to 22 patients (52.38%) in group 1 using normal saline as control.

Conclusion: Prophylactic Dexamethasone 0.1 mg/kg body weight was given soon after induction of anaesthesia provided significant reduction in post operative nausea and vomiting in patients undergoing otorhinolaryngology surgery in paediatric age group (3–18 years).

Supervisor:

Dr Gnandev Phutane

Co-Supervisor:

Associate Professor Dr Shamsul Kamalrujan Hass

Dr Mohd Nikman Ahmad

ACUTE KIDNEY INJURY IN THE INTENSIVE CARE UNITS: INCIDENCE, RISK FACTORS AND MORTALITY

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Introduction: Acute Kidney Injury (AKI) is commonly occurred in critically ill patients who are admitted to Intensive Care Unit (ICU) and it is associated with a high mortality. The study was undertaken to evaluate incidence of AKI, to define risk factors associated with AKI and ICU mortality and to assess the outcome of patients who develop AKI in ICU.

Objectives: The aims of this study were to evaluate the epidemiology of AKI (Acute Kidney Injury) in critically ill patients in ICU. These include evaluation the early incidence and severity of AKI after 48 hours admission to ICU by applying Acute Kidney Injury Network (AKIN) classification of AKI, identify the risk factors related to the development of AKI in critically ill ICU patients. This study was carried out to assess the mortality rate and risk factors of mortality in ICU in critically ill patients who develop AKI, and assess the length of stay (LOS) in ICU in critically ill patients who develop AKI.

Methods: A total of 334 critically ill patients were evaluated according to the Acute Kidney Injury Network (AKIN) classification. Those patients who were younger than 18 years, discharged within 48 hours after admission to ICU, those who had a history of chronic kidney disease undergoing dialysis or renal transplant patients were excluded from the study. Clinical data including age, gender, type of admission, primary diagnosis, and the need for organ support such as vasoactive therapy, mechanical ventilation and renal replacement therapy were analysed. Acute physiology, chronic health evaluation (APACHE) II, Sequential Organ Failure Assessment (SOFA) and non-renal SOFA scores were calculated based on the worst variables recorded during the first 24 hours of ICU admission. Clinical outcomes were assessed included early incidence of AKI within 48 hours of ICU admission, ICU mortality rate and length of stay in ICU. Simple logistic regression analysis was performed to find variables relevant to risk factors and prognosis, odds ratio and 95% confidence interval. Multiple-factor analysis with logistic regression analysis was used to analyse the correlation between risk factors of occurrence of AKI and ICU mortality in AKI.

Results: AKI occurred in 163 of the 334 patients (48.8%) during their ICU stay, with AKIN I, II and III in 16.2%, 7.8% and 24.8% respectively. In simple logistic regression analysis, the age, gender, non-elective admission, proportion of medical admission, primary diagnoses of sepsis and trauma, vasoactive therapy, illness severity scores such as APACHE II, SOFA and non-renal SOFA scores were significantly higher in

patients with AKI than in those without AKI. However, only APACHE II and SOFA remained significant in a multiple logistic regression analysis. The overall mortality rate of ICU patients was 25.7%. The mortality of AKI patients (36.2%) was significantly higher than non-AKI patients (9.4%). In multiple logistic regression analysis, three variables RRT, APACHE II score and sepsis were identified as the independent risk factors for ICU mortality in AKI.

Conclusion: AKI is associated with higher odds of death and increasing severity of AKI as stratified by AKIN classification. Furthermore, AKI incur a significantly increased length of stay in ICU. Generic illness severity scores, APACHE II and SOFA scores within 24 hours of ICU admission were strong independent predictors of developing AKI in ICU patients. The need of RRT, higher APACHE II score and primary diagnosis of sepsis were independently associated with mortality in AKI positive ICU patients.

Supervisor:

Associate Professor Dr Saedah binti Ali

Co-supervisor:

Dr Gnandev Phutane

Dr Lily Ng Mooi Hang: Co-supervisor

EFFECTIVENESS OF NURSING PERSONEL EDUCATION ON DWELL TIME AND IDLE TIME OF CENTRAL VENOUS CATHETER FOLLOWING PATIENTS' DISCHARGE FROM INTENSIVE CARE UNIT

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Introduction: CRBSI is a known complication for indwelling CVC. With highest number of indwelling CVC found in general wards, the incidence of CRBSI too would be high. By using dwell and idle time of CVC as parameters in development of CRBSI, a study was done among patients with indwelling CVC in general wards and nurses who provide care to them.

Objectives: The aim of this study was to observe the dwell and idle times of CVC in patients transferred from intensive care unit before and after educating the nurses in general wards of Hospital Universiti Sains Malaysia.

Methods: Total of 92 patients was recruited for this prospective cohort study. They were divided into two groups; the pre- and post-intervention groups and observed for the dwell and idle times of CVC. 82 nurses were recruited and divided into two groups; pre- and post-education groups. Identical questionnaires were used in each group of nurses to evaluate the effectiveness of education.

Results: There were significant differences in the dwell and idle times between the two groups of patients. The dwell

time in the pre-education group was 7.87 days (1.24) compared to that of post-education group in which the dwell time was 5.87 days (1.39).

In the pre-education group, the idle time was 2.54 days (1.15), while the idle time in the post-education group was 1.00 days (1.03). The questionnaires distributed before and after education to the nursing personnel showed improvement in answering the questions correctly when compared the mean (SD) of 2.36 (0.27) in the pre-education group to 2.58 (0.12) in the post-education group. However, the post-education group of nurses had nurses with more years of working experience with a value of 6.51 years (1.47) compared to 5.37 years (1.26) in the pre-education group.

Conclusion: By educating the nursing personnel regarding the care of CVC in wards, the dwell and idle times of CVC were significantly decreased. This shows that educating nurses is effective if the compliance to CVC care is good.

Supervisor:

Associate Professor Dr Shamsul Kamalrujan Hassan

Co-Supervisor:

Associate Professor Dr Niza rAbd Jalil:

A STUDY ON BASELINE VALUES OF THYROID HORMONES AS A PREDICTOR OF THE OUTCOME IN PATIENTS ADMITTED TO INTENSIVE CARE UNIT HOSPITAL UNIVERSITI SAINS MALAYSIA.

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Introduction: Hormonal changes during critical illness particularly reduction in secretion and function of thyroid hormones was previously viewed as an adaptive mechanism to acute stress. However, in recent years this condition which named as non-thyroidal illness syndrome (NTIS), was found associated with many unfavourable outcome and researchers even suggested an aggressive management in contrast to previously supportive management.

Objectives: The main purpose of this research was to study the values of baseline thyroid hormones as a prognostic factor to predict outcomes of critically ill patient admitted in Intensive Care Unit. The other aims were to determine the baseline levels thyroid hormones of newly admitted patients in ICU and to describe the outcomes of the patients in term of complications such as arrhythmia, ventilator-associated pneumonia (VAP), acute respiratory distress syndrome (ARDS), acute renal failure (ARF), prolonged mechanical ventilation (PMV), and ICU mortality.

Methods: A total of 92 patients who were newly admitted to ICU were recruited in this prospective observational study based on convenient and availability sampling method. During first hour of admission, basic

demographic data and severity score using APACHE II and SOFA scores were recorded. A 5 mL blood sample was taken once within 24 hours of admission and sent for baseline serum TSH, T₄, T₃, albumin, and creatinine levels. All the study samples were followed up until discharged from ICU. The observed outcome in this study were complications such as arrhythmia, ventilator-associated pneumonia (VAP), acute respiratory distress syndrome (ARDS), acute renal failure (ARF), prolonged mechanical ventilation (PMV) and mortality.

Result: The most frequent complication was acute renal failure involving 46 patients (50%). Patients with ARF had higher APACHE II score (18, Iqr 10 vs. 9.5, Iqr 12; $P < 0.001$), higher SOFA score (8, Iqr 6 vs. 5 Iqr 4), higher serum creatinine (171 $\mu\text{mol/L}$, Iqr 127.25 vs. 88 $\mu\text{mol/L}$, Iqr 40; $P < 0.001$), lower TSH (0.50 mIU/L, Iqr 0.85 vs. 0.85 mIU/L, Iqr 1.43; $p = 0.011$) and lower T₃ (2.20 pmol/L, Iqr 0.63 vs. 3.05 pmol/L, Iqr 1.53; $P < 0.001$) compared to no ARF group. Prolonged mechanical ventilation (PMV) rate was 22.8 % of total patient. The T₃ level was significantly lower in PMV group (2.30 pmol/L, Iqr 0.95 vs. 2.60 pmol/L, Iqr 1.40; $P = 0.029$) than normal duration of mechanical ventilation group. There were 32 (34.8%) patients ended up with mortality and had significant higher APACHE II score (18.5, Iqr 10 vs. 10, Iqr 12; $P < 0.001$) higher SOFA (9, Iqr 5 vs. 5, Iqr 5; $P < 0.001$), lower T₃ (2.25 pmol/L, Iqr 0.75 vs. 2.70 pmol/L, Iqr 1.21; $P = 0.005$), lower serum albumin (25 g/L, Iqr 7 vs. 28 g/L, Iqr 10; $P = 0.026$), higher creatinine (167 $\mu\text{mol/L}$, Iqr 127.75 vs. 95.5 $\mu\text{mol/L}$, Iqr 61.75; $P < 0.001$) and longer duration of ventilation (8 days, Iqr 10 vs. 5, Iqr 7.75; $P = 0.003$). Low baseline TSH level was a significant risk factor for VAP while low baseline T₃ level was significant risk factor ARF, PMV, and mortality.

Conclusion: This study revealed that reduction in baseline thyroid hormones levels among patients in this critical care center, associated with poorer outcome in term of complication such as VAP, ARF and PMV. A low baseline T₃ also a good factor to predict the chance of a patient to develop complications in ICU.

Supervisor:

Associate Professor Dr Saedah Ali

Co-Supervisor:

Associate Professor Dr Mahamarowi Omar

RANDOMIZED CONTROLLED TRIAL FOR PERCUTANEOUS INTRADISCAL RADIOFREQUENCY DISC DECOMPRESSION (IDRFDD) VS CONSERVATIVE MANAGEMENT OF SLIPPED DISC.

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Introduction: Chronic lumbar pain is a prevalent condition affecting many people worldwide. One of the major factors for chronic back pain is slipped or herniated disc. Surgery remains the most effective modality for the treatment of such condition. However, other less invasive treatment modalities are sought after to avoid surgical-related complications. One of the minimally-invasive therapies for slipped disc is intradiscal radiofrequency disc decompression (IDRFDD). This intervention is however yet to be evaluated by a properly designed randomized controlled trial and therefore the treatment effects remain unverifiable.

Objectives: To compare the efficacy of IDRFDD with conservative management using visual analog scale (VAS) scores and improvements in health-related quality of life (HRQOL) as assessed by SF36 subscale scores.

Methods: Forty eight subjects ($n = 48$) with confirmed diagnosis of lumbar disc herniation with MRI and who failed at least 1 medical intervention were recruited. These subjects were then randomized into two groups in 1:1 ratio ($n = 24$ each group) using computer-generated random number (simple randomisation). Those who were in group A received conservative therapy (physiotherapy, usual analgesic agents and epidural injection of steroid) whilst IDRFDD was given to those in group B. The subjects were then followed up for 6 months and VAS scores and SF36 subscale scores were obtained from each subjects at 4 time points (baseline, 1 month, 3 months, and 6 months post intervention).

Results: Subjects in IDRFDD group showed statistically-significant improvement in VAS scores across the time (P values < 0.001) for all comparisons except month 3 to month 1 comparison (P value = 0.003). Similarly, IDRFDD fared better than conservative management in terms of mean reduction of VAS scores from 1 month post-intervention up to 6 months. Besides that, IDRFDD-treated subjects also demonstrated statistically-significant improvements (P value < 0.05) in nearly all SF36 subscale scores except for social functioning domain scores, after comparisons were made between post-intervention subscale scores with baseline scores. On the other hand, conservative management group had statistically-significant higher subscale scores (P value < 0.05) in all SF36 domains (except social functioning subscale scores) than IDRFDD-treated group across all time points.

Conclusion: IDRFDD is an effective treatment modality for lumbar pain secondary to slipped/herniated intervertebral discs as evident by reduction in VAS scores and improvement in HRQOL as evident by increased SF36 subscale scores across time. Besides, IDRFDD is also better than conservative therapy in reducing pain magnitude across all time points. However, conservative management proves to be superior to IDRFDD in mitigating the magnitude of lumbar pain and improving health related quality of life (HRQOL).

Supervisor:

Associate Professor Dr Nizar b. Jalil

Co-Supervisor:

Dr Gnandev Phutane

A COMPARATIVE STUDY OF INTRATHECAL FENTANYL OR MAGNESIUM IN ADDITION TO HEAVY BUPIVACAINE- MORPHINE TO PREVENT INTRAOPERATIVE DISCOMFORT IN ELECTIVE CAESAREAN SECTION

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Introduction: Intrathecal morphine in addition to heavy bupivacaine is a common practice for post-operative pain management in caesarean section delivery under spinal anaesthesia. However this technique does not totally prevent the incidence of intraoperative visceral discomfort.

Objectives: The aims of this study were to compare the effects of small doses of intrathecal fentanyl or magnesium in addition to common intrathecal drug regimes in preventing intraoperative discomfort during elective caesarean section.

Methods: Eighty-four (ASA I or II) adult patients scheduled for elective caesarean section under spinal anaesthesia were randomly allocated to one of the three groups: (1) Control group (C): hyperbaric bupivacaine 0.5% + 100 µg morphine (0.1 mL) + 0.2 mL of 0.9% NS, (2) Fentanyl group (F): hyperbaric bupivacaine 0.5% + 100 µg morphine (0.1 mL) + 10 µg fentanyl (0.2 mL), (3) Magnesium (Mg): hyperbaric bupivacaine 0.5% + 100 µg morphine (0.1 mL) + 50 µg magnesium sulphate (0.1 mL) + 0.1 mL of 0.9% NS. Intraoperative discomfort score, requirement of intraoperative IV fentanyl supplementation, onset and duration of sensory and motor block, hemodynamic changes, fetal outcomes, time to the first request of post-operative analgesia, side effects, and maternal satisfaction were evaluated.

Results: Group F showed significantly less discomfort requiring intervention (0 %) than group C (50%) and group Mg (39.3%); ($P < 0.001$). IV fentanyl supplementation was also significantly less in the group F than the other two groups; (0.00, IQR 0.00)mg, ($P < 0.001$). Group Mg showed significant slower in onset; (4.00, IQR 3.00)min, ($P = 0.025$), but prolonged in the duration of motor block; mean (SD) = [104.43 (11.83)] min, ($P < 0.001$), than the other two groups. Time to the first analgesic request was longer in group Mg, 390 min (95% CI 370.92-409.08), vs. 250 min (95% CI 230.75-269.25) in group C and 320 min (95% CI 308.00- 332.00) in group F; ($P < 0.001$). Hemodynamic changes, side effects, onset of sensory and maximal dermatomal block, apgar scores, and maternal satisfaction were comparable in all groups.

Conclusion: The addition of intrathecal fentanyl to heavy bupivacaine-intrathecal morphine prevented intraoperative discomfort during spinal anaesthesia. Whereas, intrathecal magnesium sulphate was not favourable to prevent intraoperative discomfort but it prolonged motor blockade and post-operative analgesia.

Supervisor:

Dr Wan Mohd Nazaruddin Wan Hassan

Co-Supervisor:

Dr Norliza Mohd Nor

Associate Professor Dr Syamsul Kamaruljan

THE EFFECTIVENESS OF RADIOFREQUENCY NEUROTOMY OF CERVICAL FACET IN THE TREATMENT OF SECONDARY MYOFASCIAL PAIN SYNDROME OF NECK AND SHOULDER

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Introduction: Myofascial pain syndrome (MPS) is a term to describe chronic regional pain syndrome, presented with hyperirritable spot called trigger points and/or tender spots that arises from taut band in a skeletal muscle. Muscle in general and myofascial pain in particular, has received less attention as major source of pain and dysfunction. Myofascial pain which is treatable, but often under-diagnosed and thereby under-treated due to lack of awareness among physician. In extreme situation, MPS can be mis-diagnosed as it may mimic other medical problems.

Objectives: To determine the prevalence of MPS of the neck and shoulder among cervical facet syndrome patients and to evaluate the effectiveness of radiofrequency neurotomy of the cervical facet in the treatment of secondary MPS of neck and shoulder.

Methods: All patients who were diagnosed with cervical facet syndrome who presented to the pain clinic between October 2012 and February 2013 will be identified. Among these patients, those who had neck and shoulder pain symptoms will be further identified to evaluate the prevalence of these symptoms among cervical facet syndrome patients. Those with secondary MPS of neck and shoulder will undergo radiofrequency neurotomy of the cervical facet. Pain evaluation will be carried out using visual analogue pain score (VAS) with 0-10 cm score and also functional assessment using SF36 questionnaires at pre-procedure, 1st, 3rd, and 6th month post procedure.

Results: The prevalence of secondary myofascial pain syndrome of neck and shoulder among cervical facet syndrome patients was 91.7%. There was a significant reduction of mean VAS with time ($P < 0.001$). There were significant mean differences only between pre-treatment and 1st month, pre-treatment and 3rd month and pre-treatment and 6th month with percentage of reduction were 50%, 68.3%, and 75% respectively. SF-36 questionnaire analysis showed an overall significant improvement with time ($P < 0.001$) between pre-treatment and 1st month, pre-treatment and 3rd month and pre-treatment and 6th month for general health, limitation of activities, physical health, emotional health, social activities, energy and emotions, social activities 2 and

general health 2 categories. The percentage of reductions between pre-treatment and 1st month, pre-treatment and 3rd month and pre-treatment and 6th month were 70%, 80.6%, and 82.9% respectively (general health), 70%, 85.6%, and 87.1% respectively (limitation of activities), 78.8%, 88.6%, and 89.4% respectively (physical health), 79.1%, 89.3%, and 89.5% respectively (emotional health), 61.9%, 78.7%, and 80.9% respectively (social activities), 56.2%, 69.3%, and 71.4% respectively (energy and emotions), 59.3%, 67.6%, and 70.1% respectively (social activities 2) and general health 2 category accounted for 58.8% and 65% each respectively. Pain assessment category showed significant mean reductions between pre-treatment and 1st month, pre-treatment and 3rd month, pre-treatment and 6th month as well as 1st and 3rd months and 1st and 6th months with percentage reductions of 55.2%, 68.7%, 69.6%, 13.5%, and 14.5% respectively.

Conclusion: The prevalence of secondary myofascial pain of the neck and shoulder was high among cervical facet syndrome patients in hospital Universiti Sains Malaysia which was 91.7%. This study has proven that radiofrequency neurotomy of the cervical facet is very effective in the treatment of secondary myofascial pain syndrome of the neck and shoulder over the duration of 6 months.

Supervisor:

Associate Professor Dr Nizar bin Abdul Jalil

Co-supervisor:

Dr Mohd Nikman bin Ahmad

THE EFFECT OF INTRATHECAL PETHIDINE VERSUS INTRATHECAL MORPHINE ON SHIVERING DURING SPINAL ANAESTHESIA FOR LOWER LIMBS SURGERY

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Introduction: Shivering has been identified as one of the troublesome complication arising either after induction of regional anaesthesia or after recovery from a general anaesthesia. Potential detrimental effects are increases in oxygen consumption, carbon dioxide production, lung ventilation, and cardiac work causing decreased mixed-venous oxygen saturation. In a shivering patient, oxygen consumption increase by 200–500%. Hypothermia may also trigger vasoconstriction and increase vascular resistance. In patient with limited cardiac reserve due to arteriosclerosis, shivering will inevitably compromise myocardial function. Shivering also has an effect towards increase in intraocular and intracranial pressure. Shivering also contribute to the increase in severity of wound pain. It also contributes to the discomfort and unpleasant experience for the patients themselves. It also disturb with the monitoring of patient's

vital signs throughout the surgical procedure and leads to measurement error. Intravenous pethidine is the mainstay treatment of intra-operative and post-operative of shivering regardless the type of anaesthesia given. However, studies regarding its intra-thecal application as pre-emptive method to prevent shivering during spinal anaesthesia are lacking

Objectives: The objective of this study is to determine if the addition of 10 mg of pethidine to bupivacaine spinal mixture decreases the incidence and intensity of shivering during spinal anaesthesia for patient undergoing lower limbs orthopedic procedure when compare to the addition of 0.1 mg morphine into spinal mixture. Other consequences after usage of both opiates were also studied. This study also compared the incidence of side effects and the duration of analgesia between the additions of pethidine versus morphine into bupivacaine spinal mixture.

Methods: Ninety four patients, ASA physical status I or II, undergoing elective lower limbs orthopaedic procedure were selected and divided equally into two groups to randomly received either intrathecal morphine (0.1 mg) or pethidine (10 mg) added into hyperbaric bupivacaine 0.5% as spinal mixture with the total of each mixture were 3 mL. Shivering was graded according to shivering score. Sensory level block was evaluated using pinprick test at 1 minute and after 3 minutes. The onset of motor block was noted and assessed with Bromage scale. Temperature changes, systolic and diastolic blood pressure and sedation score were also assessed. Adverse events such as shivering, nausea, vomiting, pruritus, and respiratory depression are also recorded. Pain score was assessed after operation at recovery room and postoperative period in general ward.

Results: The incidence and intensity of shivering was significantly less in the pethidine group than morphine group (3% SD 6.7 versus 0 %, $P = 0.01$). However, nausea and vomiting was more common in the pethidine group compared with the morphine group (15% SD 31.90 versus 3% SD 6.71, $P = 0.002$). The analgesia duration was also shortened compared to morphine (120 minutes \pm 1.23 versus 660 \pm 1.58 minutes, $P = 0.002$).

Conclusion: The addition of intrathecal pethidine 10mg compared to morphine 0.1mg added to spinal mixture of hyperbaric bupivacaine reduced the incidence of shivering but it did not prolonged the duration of effective analgesia and associated with increased incidence of nausea and vomiting.

Supervisor:

Dr Nikman Ahmad

Co-Supervisor:

Associate Professor Dr Nizar Abdul Jalil

COMPARING THE EFFECT OF PRELOADING AND MAINTENANCE WITH STEROFUNDIN® ISO AND RINGER'S LACTATE SOLUTION DURING SPINAL ANAESTHESIA FOR LOWER LIMB ORTHOPAEDIC SURGERY

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MMed (Anaesthesiology)

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Introduction: Hypotension following spinal anaesthesia is one of the common side effects. The value of intravenous crystalloid administration in preventing spinal induced hypotension has recently been questioned. However, this knowledge needs to be reevaluated with the introduction of new balanced isotonic solution, Sterofundin® ISO.

Objectives: The aim of our study was to evaluate the effect of preloading and maintenance with Sterofundin® ISO and Ringer's Lactate solution during spinal anaesthesia for lower limb orthopaedic surgery in terms of hemodynamic changes and also electrolytes and acid base balance.

Methods: Total of 70 patients aged between 18 to 55 years old were recruited for this double-blinded, randomised controlled trial. They were randomised to receive either Sterofundin® ISO or Ringer's Lactate solution as a preload and maintenance during the surgery. Measurement included SBP, DBP, MAP, and HR were recorded. Blood samples for electrolytes and acid base balance were taken in 2 different occasions that include before infusion of chosen solution and post-operatively.

Results: There was no significant difference in hemodynamic values between those 2 groups. However, the requirement of treatment with phenylephrine due to hypotension was significant ($P = 0.04$) in favour to Sterofundin® ISO. Intergroup analysis of electrolytes level and acid base balance showed that there were significant differences in sodium ($P = 0.005$), potassium, pH, base excess, and lactate level ($P < 0.001$). For intragroup analysis, there were significant increased in chloride, pH and base excess level and significant decreased in sodium, potassium and lactate level with P value of < 0.001 for each parameter except for sodium ($P = 0.024$) in Sterofundin® ISO group whereas significant increased in potassium, chloride and lactate level and a significant decreased in sodium, pH and base excess level were observed in Ringer's Lactate group with P value of < 0.001 for each parameter except for base excess ($P = 0.001$).

Conclusion: Both solutions result in similar effect on hemodynamic of patients throughout the surgery, however incidence of spinal induced hypotension was less in Sterofundin® ISO group. The best metabolic profile was maintained in patients who received Sterofundin® ISO solution.

Supervisor:

Dr Rhendra Hardy Mohamad Zaini

Co-Supervisor:

Associate Professor Dr Shamsul Kamalrujan Hassan

COMPARISON OF HAEMODYNAMIC AND NEUROENDOCRINE RESPONSES BETWEEN REMIFENTANIL-TCI AND DEXMEDETOMIDINE INFUSION FOR CONSCIOUS SEDATION DURING FIBROPTIC INTUBATION

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Introduction: Awake fiberoptic intubation is a gold standard technique for managing patients with difficult airway. Both remifentanyl and dexmedetomidine have been used widely as sedative agent during fiberoptic intubation to maintain a patent airway without significant haemodynamic changes.

Objective: In this study, our aim is to compare the changes in haemodynamic and responses of neuroendocrine hormones during conscious sedation fiberoptic intubation between Remifentanyl and Dexmedetomidine.

Methods: This was a prospective, double-blinded, randomised clinical trial with 64 patients scheduled for elective surgery under general anaesthesia. They were selected during premedication round with ASA I-II who are identified as a group of difficult intubation. They were randomised equally to receive either dexmedetomidine infusion (0.5 mcg/kg over 10 minutes followed by 0.5–0.7 mcg/kg/hr) ($n = 32$) or remifentanyl-TCI (0.5 – 1 ng/mL) ($n = 32$). Patient's BP, HR, MAP, oxygen saturation were recorded as a baseline values, post intubation and every 2 minutes until 10 minutes post-successful procedure. BIS value was taken as a baseline during awake and pre-intubation during sedation started. Serum cortisol and ACTH were taken prior starting the study drug infusion, post successful intubation and 10 after minutes procedure. Postoperatively, patients were assessed the level of recall, adverse events and satisfaction score.

Results: There were no significant changes in the baseline hemodynamic parameters (SBP, DBP, MAP, HR and SPO_2) before starting both study drug infusion. There were decreased in sBP, MAP and HR in dexmedetomidine group starting from 5 minutes drug infusion until endobronchial intubation. Remifentanyl showed desaturation more during intubation compared to dexmedetomidine. Both drugs showed decreased in ACTH and cortisol level from baseline and responded with stress attenuation. Most of the patients from dexmedetomidine group did not recall any event during FOS and FOI and showed that dexmedetomidine has significant stronger amnestic properties than remifentanyl. Post-operatively, there were no significant differences in term of sore throat and hoarseness of voice in these 2 study drugs.

Conclusions: Both dexmedetomidine and remifentanyl are effective for awake fiberoptic intubation by attenuating stress hormones. However, dexmedetomidine showed more

stable haemodynamic with stronger amnesic properties and suitable for hypertensive and IHD patients.

Supervisor:
Dr Rhendra Hardy Mohamad Zaini
Co-Supervisor:
Dr Mohd Nikman Ahmad
Dr Mazelan Omar

DOPPLER VERSUS ULTRASOUND GUIDED IN LOWER APPROACH INTERNAL JUGULAR VEIN CANNULATION IN NORMOTENSIVE PATIENTS IN HUSM

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Introduction: Central venous cannulation was inserted for several reasons. However traditionally it was blindly cannulated according to anatomical landmark. Currently evidence showed that ultrasound guided central venous catheter insertion is safer with reduced complications. Although the usage of ultrasound becomes worldwide, there is some centre where ultrasound is not available. There were few studies on the usefulness of Doppler guided in internal jugular vein cannulation in infant and paediatric patients and even fewer in adult patients.

Objectives: To compare the outcome between Doppler and ultrasound guided in cannulation of internal jugular vein catheter for central venous pressure monitoring in terms of the mean time and the successful first attempt between both apparatus. This study also compare the accuracy of Doppler as an adjunct apparatus by comparing the distance of internal jugular vein and carotid artery using Doppler in relation to Ultrasound

Methods: A prospective simple randomized control trial participating eighty four normotensive patients who require central venous pressure monitoring was carried out in HUSM. All central venous catheterization either using ultrasound or Doppler guided was inserted by the same operator. Mean access time, successful first attempt and the distance between carotid artery and internal jugular vein was recorded.

Result: Ultrasound guided internal jugular vein cannulations show less access time $60.0s \pm 23.0$ compare to Doppler $63.2s \pm 27.0$ and higher successful first attempt $38(90.5\%)$ with P value = 0.13. However statistically its showed no significant different between both apparatus. Doppler also is reliable to be use as an adjunct technique as statistically its showed correlation between both with ICC 0.869, 95% CI.

Conclusions: Doppler guided in internal jugular vein cannulation can be use as an adjunct technique as it also able to increase the success rate of cannulation and it is as accurate

as ultrasound technique.

Supervisor:
Dr Mohd Nikman Ahmad
Co-Supervisor:
Dr Rhendra Hardy Mohamad Zaini

BALANCED FLUID REGIME VERSUS SALINE-BASED FLUID REGIME FOR ELECTIVE SUPRATENTORIAL CRANIOTOMY: INTRAOPERATIVE ACID BASE AND ELECTROLYTES ASSESSMENT

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MMed (Anaesthesiology)

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Introduction: Intraoperative fluid management during prolonged elective supratentorial craniotomy was a great challenge because it was potential to cause cerebral oedema and imbalance of serum electrolytes as well as acid base. Saline-based fluid has commonly been used as a fluid of choice during neurosurgery. However the availability of balanced fluid solutions which contained electrolyte properties closed to plasma content, gave a new dimension for better fluid management during neurosurgery.

Objectives: The aims of this study were to compare between balanced fluid regime and saline fluid regime on electrolytes, acid base profile, albumin level, serum osmolality, and the intraoperative brain relaxation during elective supratentorial craniotomy.

Methods: This is a prospective, randomised, and single blinded trial on 56 patients undergoing elective supratentorial craniotomy, aged between 18–65 years old, ASA I-III and Glasgow Coma Scale (GCS) of 15. They were randomized into two groups: Group B were only received balanced fluids (Sterofundin®ISO as crystalloid and Tetraspan®6% as colloid) whereas Group S were only received saline-based fluids (normal saline 0.9% as crystalloid and Venofundin®6% as colloid) throughout the surgery. Electrolytes, acid base parameter and serum osmolality were taken at baseline and post operatively. Brain relaxation was assessed by the surgeons after opening and before closing of dura mater.

Results: Mean changes of chloride (Cl^-) level was significantly higher in Group S than Group B, $7.70 (4.79)$ vs $2.64 (3.87)$ mmol/L, $P = 0.000$. Mean changes of magnesium (Mg^{2+}) and calcium (Ca^{2+}) were higher and more stable in group B than group S, $0.03(0.21)$ vs $-0.07 (0.14)$ mmol/L, $P = 0.037$ and $0.07 (0.22)$ vs $-0.11 (0.31)$ mmol/L, $P = 0.021$ respectively. Both groups were decreased in mean changes of albumin level but more pronounced in group S, $-7.67 (3.81)$ vs $-4.75 (5.67)$ g/L, $P = 0.029$. Base excess was decreased more in group S than group B, $-3.06 (3.05)$ vs $-0.83 (3.03)$ mmol/L, $P = 0.009$. HCO_3^- was also decreased more in group S than

group B, -2.98 (2.09) vs -1.47 (2.26) mmol/L, $P = 0.012$). Lactate level was slightly higher in group B than group S, 0.62 (0.85) vs 0.17 (0.85), $P = 0.025$. There were no significant differences in pH, serum osmolality, and brain relaxation.

Conclusion: Balanced fluid regime was more stable in maintaining patients' electrolytes particularly Mg^{2+} , Ca^{2+} , and Cl- as well as acid base balance during prolonged elective supratentorial craniotomy. Whereas, saline based fluid regime caused more hyperchloremia which led towards more metabolic acidosis. Both fluid regimes were able to maintain normal serum osmolality and caused hypoalbuminemia which is most likely due to dilutional effect.

Supervisor:

Dr Wan Mohd. Nazarudin b. Wan Hassan

Co-Supervisor:

Associate Professor Dr Shamsul Kamalrujan Hassan

Dr Peter Tan Chee Seong

A COMPARISON AMBU® LARYNGEAL MASK AIRWAY AND CLASSIC LARYNGEAL MASK AIRWAY IN SPONTANEOUS VENTILATING PAEDIATRIC PATIENTS

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MMed Anaesthesiology

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Introduction: The purpose of this study is to make a comparison of haemodynamic stability and ease of insertion between AMBU® LMA and the commonly used Classic LMA in patients breathing spontaneously during general anaesthesia undergoing elective short surgical surgery. The study was done to determine the safety, ease of use and reliability of the AMBU® LMA compared to Classic LMA.

Objectives: To determine easiness of insertion between Ambu® LMA and Classic™ LMA, to compare the incidence of perioperative complications between Ambu® LMA and Classic™ LMA and to evaluate hemodynamic changes between Ambu® LMA and Classic™ LMA during insertion and removal of the devices.

Methods: A randomized prospective study was conducted on 99 paediatric patients of ASA 1 and 2 aged between 1 to 12 years old. They were divided into two groups either AMBU® or Classic LMA and the patients were allowed to breathe spontaneously throughout the surgery. Anaesthesia was maintained with oxygen and sevoflurane. The LMA was removed at the end of the surgery when the patient still deep in anaesthesia. The duration of insertion and number of attempts needed to successfully secure the airway was recorded. Systolic, diastolic and mean arterial pressure and heart rate also recorded at different time interval.

Results: We found that AMBU® LMA was easier to be inserted with a shorter mean time at $15.92 \pm 2.86s$ (mean

\pm SD) compared to Classic LMA at $19.80 \pm 5.45s$ (mean \pm SD). The difference was statistically significant with $p=0.001$. There was also less incidence of malposition and blood streak in Ambu® LMA compare to Classic™ LMA with $p=0.047$ and $p=0.013$. Haemodynamically, blood pressure and heart rate were more stable in Ambu® LMA compare to Classic™ LMA.

Conclusions: In summary, we found that Ambu® LMA was easier to insert, haemodynamically more stable and less complication. Ambu® LMA appears to be a good alternative to Classic™ LMA for general anaesthesia with spontaneous ventilation.

Associate Professor Dr Saedah Ali: Supervisor

Dr Mohd Nikman bin Ahmad: Co-Supervisor

Dr Ruwaida Isa: Co-Supervisor

RETROSPECTIVE COHORT STUDY OF RUPTURED INTRACRANIAL ANEURYSMS IN HOSPITAL UNIVERSITI SAINS MALAYSIA: RISK FACTORS, COMPLICATIONS AND OUTCOME

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Introduction: Ruptured intracranial aneurysms are an important cause of haemorrhagic stroke and cause significant mortality and morbidity. A systematic approach to the diagnosis and management of such patients may go a long way in the reduction of the afore-mentioned mortality and morbidity. An understanding of the established risk factors and the complications in the management of such patients is essential

Objectives: In our retrospective cohort study of ruptured intracranial aneurysms, we attempted to analyse the risk factors, complications and outcome in the management of such patients in a 2-year period at Hospital Universiti Sains Malaysia

Methodology: A total of 32 patients' records were analyzed and the frequencies of risk factors such as hypertension, hypercholesterolaemia, diabetes mellitus, familial history of aneurysms were noted along with the usual demographic profile. Clinical presentation was classified according to the Glasgow Coma Scale and other scoring systems such as the World Federation of Neurosurgical Societies (WFNS) score, Hunt and Hess classification and Fisher's score. Anaesthetic and surgical techniques used were reviewed along with intra-operative events such as re-bleeding and application of temporary clips.

Post-operative complications such as hypo- and hypernatraemia, hypo- and hyperglycaemia, hyperthermia, incidence of infections (at various sites) and hyperthermia were taken into consideration. Outcomes were based on total duration of hospital/intensive- care unit stay along with

mortality rates and the Modified Rankin's Scale (MRS) on discharge.

Results: It was found that females made up 65.6% of the patients, most of whom were in the 50–60 year age- group hypertension was the most common concurrent medical illness, present in 68.8% of our patients either exclusively or in combination with diabetes or hypercholesterolaemia. We were however unable to demonstrate the statistical significance of the afore-mentioned risk factors.

The WFNS score had a significant association with the MRS on discharge, with Odds Ratio of 2.93 (Confidence Interval 1.082–4.05) while the same could be said of hypernatraemia on mortality (P value 0.00) and hyperthermia on MRS (P value 0.009). The associations of all other factors were found to be insignificant.

The mortality rate in our cohort was 18.8%, with 25.8% of the cohort having a good MRS (0-3) on discharge as opposed to 74.2% with a poor MRS (4-6).

Conclusions: We have managed to safely conclude that the WFNS score of patients with ruptured intracranial aneurysms is an indicator of the outcome of such patients. Furthermore, complications in management such as hypernatraemia and hyperthermia have a significant effect on mortality rates and MRS on discharge respectively.

Supervisor

Dr Wan Mohd Nazaruddin Wan Hassan

Co-Supervisor

Dr Abdul Rahman Ghani Bin Zaini

INTRAVENOUS KETAMINE AS AN ADJUVANT TO INTRATHECAL BUPIVACAINE AND FENTANYL FOR POST CAESAREAN ANALGESIA

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Introduction: Pain relief of good quality after caesarean section results in early mobilization and good early mother-child interaction. The visceral component of pain after delivery can be treated by NSAIDS. However, the effect was not sustained for 24 hours. There has been interest in the use of ketamine in subanaesthetic dose (0.1–0.5mg/kg) as an adjuvant for postoperative analgesia. As an NMDA receptor antagonist, low dose ketamine has analgesic properties by preventing induction of central sensitisation and diminished hypersensitivity. We hypothesised that intravenous ketamine 0.5mg/kg administered after delivery of the fetus during spinal anaesthesia for caesarean section, in addition to intrathecal fentanyl and intramuscular diclofenac sodium, would be an effective adjuvant in relieving postoperative pain for about 24 hours.

Objectives: The aims of this study were to compare VAS

score at 4 hours, 12hours, and 24hours post operation between intervention group (intrathecal bupivacaine + fentanyl + intravenous ketamine) and control group (intrathecal bupivacaine + fentanyl), and to compare proportion of reported breakthrough pain and time onset for first rescue analgesia.

Methods: After ethical committee approval, a prospective double-blinded randomised study was conducted on 72 patients who had undergone elective or emergency caesarean section. The patients were randomized into ketamine group or saline group. Caesarean section was done under spinal anaesthesia using 0.5% hyperbaric bupivacaine and 15mcg fentanyl under routine monitoring and care. Immediately after delivery of the fetus, patient in ketamine group received intravenous ketamine 0.5mg/kg diluted in 20mls saline until the end of surgery. Patient in normal saline group (control) received 20 mls normal saline. Postoperatively, patient in both groups was routinely monitored in the recovery and postnatal ward and the VAS score at 4, 12 and 24 hours were recorded as well as incidence of breakthrough pain and time for first rescue analgesia.

Results: There was statistically significant difference in the reduction of pain score at 4 hours and 12 hours postoperative in ketamine group than in normal saline group (P value = 0.001 at 4 hours, P value = 0.002 at 12 hours) . The incidence of breakthrough pain were also statistically significant between the 2 groups in which patients in normal saline group had higher incidence of breakthrough pain compared to ketamine group (P value = 0.001). The time of first rescue analgesia between the two groups were statistically significant (P value = 0.0061)

Conclusion: Low dose intravenous ketamine (0.5mg/kg) given immediately after delivery of the fetus post caesarean section reduces the pain score (VAS) at 4 and 12 hours postoperative and the incidence of breakthrough pain, as well as the time of first rescue analgesia between the two groups.

Supervisor:

Dr Gnandev Phutane

COMPARISON OF DIFFERENT CONCENTRATION OF TARGET CONTROL INFUSION (TCI) REMIFENTANIL ON HAEMODYNAMIC AND NEUROENDOCRINAL RESPONSE TO SKULL PIN HEAD HOLDER APPLICATION DURING CRANIOTOMY

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Introduction: Skull pin head holder is usually applied to stabilise the head position during neurosurgery. However, it may produce an intense painful stimulation which may lead to rapid increase in haemodynamic and neuroendocrinal

responses. Remifentanyl is an ultra short acting opioid which is potential to provide rapid control of pain during pinning using Target Controlled Infusion (TCI) mode.

Objectives: To compare between concentration of TCI remifentanyl 3 ng/mL and 5 ng/mL in obtunding the haemodynamic and neuroendocrinal response after skull pin head holder.

Methods: There were 88 patients aged 18–60 years old, classified under ASA I and II, were involved in this prospective, double blinded study. They were divided equally into 2 groups. No pre-medication were given to the patients. General anaesthesia were induced with TCI propofol 4 mcg/mL, TCI remifentanyl 2 ng/mL with rocuronium 0.6 mg/kg. Before the skull pin head holder application, TCI remifentanyl concentration were increased to 3 ng/mL or 5 ng/mL depending on their groups. Haemodynamics parameters were measured at baseline, 1 minute, 5 minutes, and 10 minutes after pinning. Serum cortisol and blood glucose were measured before and 30 minutes after pinning. Subsequent anaesthetic management was continued according to the requirement of the surgery using Total Intravenous Anaesthesia (TIVA) TCI technique.

Results: TCI remifentanyl 5 ng/mL group had significant reduction in the means of SBP, DBP, MAP, and HR compared to TCI remifentanyl 3 ng/mL at baseline, 1, 5, and 10 minutes after pinning ($P < 0.001$). Mean serum cortisol 30 minutes after pinning was significantly lower in TCI Remifentanyl 5 ng/mL than TCI Remifentanyl 3 ng/mL group [330.48 (103.86) vs 392.23 (104.30) nmol/l] ($p=0.007$). Mean serum glucose 30 minutes after pinning was also significantly lower in TCI Remifentanyl 5 ng/mL than TCI Remifentanyl 3 ng/mL group [7.63(1.01) vs 8.46(1.20) mmol/L] ($P = 0.001$). There were no significant differences of mean before pinning for both serum cortisol and serum glucose between the two groups.

Conclusions: TCI Remifentanyl 5 ng/mL is better than TCI Remifentanyl 3 ng/mL in obtunding the haemodynamics and neuroendocrinal response during skull pin head holder application.

Supervisor:

Dr Wam Mohd Nazaruddin Wan Hassan

Co-Supervisor:

Dr Rhendra Hardy Mohamad Zaini

A COMPARATIVE STUDY OF TARGET CONTROLLED INFUSION (TCI) PROPOFOL ANAESTHESIA VS SEVOFLURANE ANAESTHESIA FOR EMERGENCY TRAUMATIC BRAIN SURGERY: COMPARISON OF THE OUTCOME

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Background: The technique of anaesthesia for emergency traumatic brain injury (TBI) surgery is important in order to control intracranial pressure (ICP), cerebral perfusion pressure (CPP) and cerebral metabolic rate of oxygen (CMRO₂) consumption.

Objectives: The aims of the study were to compare the outcome of the patient between TCI Propofol anaesthesia and Sevoflurane inhalational anaesthesia for emergency TBI surgery. This study focused on the success rate of extubation and tracheostomy, duration of ventilation, intensive care unit (ICU) and hospital stay, and also on the mortality rate and Glasgow outcome scale (GOS) on discharge.

Methods: A prospective and randomised trial was conducted on severe TBI patients underwent emergency surgery and were anaesthetised by two different techniques. 110 patients were randomized to receive either TCI Propofol anaesthesia (n = 55) or Sevoflurane anaesthesia (n = 55). Anaesthesia conducted by TCI Propofol aimed the plasma Propofol level of 4-8mcg/mL and by Sevoflurane aimed at MAC of 1–1.5. Post-operatively, patients were continued on cerebral resuscitation in Neurosurgical ICU and followed the same standard protocol. The patients were followed up until discharge and outcome was measured based on success rate of extubation, duration of ventilation, ICU and hospital stay, mortality rate and GOS at discharge.

Results: Demographic data were comparable in both groups. There were no significant differences in success rate of extubation and rate of tracheostomy, mean duration of ventilation, ICU and hospital stay, mortality rate and GOS.

Conclusion: Both techniques of anaesthesia were comparable in outcome parameters after emergency TBI surgery.

Supervisor:

Dr Wan Mohd Nazaruddin Wan Hassan

Co-Supervisor:

Associate Professor Dr Shamsul Kamaruljan Hassan

Dato Dr Abdul Rahman Ghani

HISTOLOGICAL ANALYSIS OF MOTONEURON SURVIVAL AND MICROGLIA INHIBITION POST NERVE ROOT AVULSION TREATED WITH NERVE GRAFT IMPLANTATION AND MINOCYCLINE- AN EXPERIMENTAL STUDY

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MMed Neurosurgery

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Introduction: Motor vehicle accidents are the most common cause of injuries involving avulsion of spinal roots from the brachial plexus in human. This results in motor dysfunction that is debilitating. Surgical treatment alone does not provide favourable outcome. Lack of an established

animal model to test drug treatments hinders the introduction of new pharmacological agents for human. In the adult rat, an avulsion injury of cervical ventral roots can be replicated, and it results in a progressive and pronounced loss of the axotomised motoneurons and increase in the expression of microglia which is neurotoxic.

Objective: This is an experimental study investigating the effect of prompt nerve implantation and minocycline treatment on the suppression of microglia activation and survival of motoneurons.

Methods: Adult female Sprague-Dawley rats were used for this study. At 6 weeks post-operatively, immunohistochemistry using primary antibody Iba1 (microglia) and NadPh with neutral red staining (motoneuron) under light microscopy was performed at the C6 spinal cord segment and then quantified.

Results: Minocycline treatment does in fact beneficial because it shows significant reduction of microglia expression in the study group ($P = 0.02$). However, this is not translated into significant increase of motoneuron survival in the combined group ($P = 0.7$). This may be due to the surgical effect in itself in which it causes more trauma to the cord parenchyma leading to further motoneuron loss and increase in scarring around the avulsed region thus impeding regeneration of the motoneuron itself. Other factors include vascular injury leading to cord ischaemia and deprivation of neurotrophic factors which were lost during the avulsion procedure, such as the BDNF and GDNF that are vital for motoneuron survival. Apart from that, microglia inhibition may not be a single factor in ensuring survival of motoneuron survival after an avulsion injury.

Conclusions: This study showed that prompt implantation of peripheral nerve graft and treatment with minocycline exerts neuroprotective effect evident by reduction of microglia expression. However, numbers of surviving motoneuron is not significant in the treatment group; maybe due to a myriad of factors explained earlier.

Supervisor:

Profesor Dr Jafri Malin Abdullah

THE EVALUATION OF COGNITIVE IMPAIRMENT WITH THE USE OF P300 COMPONENT IN EVENT RELATED POTENTIAL (ERP) AND NEUROPSYCHOLOGY IN MILD BRAIN INJURY (MBI) PATIENTS.

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Introduction: Mild traumatic brain injury influencing cognition is commonly debated amongst researchers, creating an increasing potential for the use of ERP along with

neuroimaging and neuropsychological testing to assist in the management of these patients.

Objectives: To compare the amplitude and latency of the P300 ERP component between a control group and patients after MBI during the duration of 1–7 days (short duration) and 2–3 months (long duration) along with the comparison of the outcome of neuropsychological tests between the long duration post-injury and control study groups.

Methods: A prospective cohort study was conducted. Using a 128-electrode net, we studied responses to auditory stimulation in 2 main and 1 subgroups being control healthy group (19 patients, both ERP and neuropsychology test done), the MBI 1 group (17 patients, only ERP done within 7 days after injury) and the MBI 2 subgroup who were the 17 MBI 1 patients where a repeated ERP together with neuropsychological testing was done at 2–3 months post injury. Auditory evoked responses were studied with 2 different stimuli (standard and target stimuli) where the P300 amplitude and latency were recorded from three midline sites being frontal (Fz), central (Cz), and parietal (Pz) and results were compared between the groups, as were the neuropsychological test results.

Results: There was a significant prolongation of the target P300 latency values shown by the MBI 1 group measured at the Cz electrode compared to the control group which was also seen when the MBI 1 and MBI 2 groups were compared even though they were within the normal ranges. The results of the P300 amplitude values measured at the Fz electrode showed the control group to have higher readings during presentation of standard tones compared to MBI 1 group. The MBI 2 group performed better on neuropsychological tests WMSVM1, RAVLTDR, and RAVLTIM.

Conclusion: The latency of P300 was significantly prolonged in early MBI patients that improved over time to within normal range and also that the neuropsychological test of MBI 2 patients were comparable to the control group. The study indicates that ERP should be used as an additional modality of investigation and that MBI patients can have improvement in cognition with time and by involving themselves in their jobs actively.

Supervisor:

Associate Profesor Dr Zamzuri Idris

Co-Supervisor:

Dr Tahamina Begum

FACTORS INFLUENCING DISCONNECTION HYPERPROLACTINEMIA AND REVERSAL OF SERUM PROLACTIN AFTER PITUITARY SURGERY IN A NON FUNCTIONING PITUITARY MACROADENOMA.

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MSurg (Neurosurgery)

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Introduction: Hyperprolactinemia is frequently seen in patients with pituitary macroadenoma that do not secrete prolactin. This disconnection hyperprolactinemia in non functioning pituitary macroadenoma are largely due to compression of pituitary stalk and portal vessels leading to uninhibitory prolactin secretion. The aim of this study is to look into the factors influencing the elevation of serum prolactin level in series of patient harbouring non-functioning pituitary macroadenomas and the reversal of elevated serum prolactin to near normal after pituitary surgery. This study will look into the direct relationship between the degree of serum prolactin elevation in regards to tumour size, degree of pituitary stalk displacement, the extent of tumour growth based on modified Wilson-Hardy's classification. This variables are compared pre and post operatively.

Methods: This is an observational prospective and retrospective study on patients harbouring non-functioning pituitary macroadenoma who has undergone endoscopic transphenoidal resection of pituitary macroadenoma in Hospital Kuala Lumpur over a period of 2 years (Jan 2011 to Jan 2013). This patient with pituitary macroadenoma who has raised serum prolactin level not exceeding 3000mIU/l is recruited. The serum prolactin pre and post-operative are evaluated. Other variables that are included are pituitary volume, tumour growth pattern based on modified Hardy's classification and pituitary stalk angle displacement. These variables are measured pre and post operatively. A group of patients with normal serum prolactin level and normal pituitary gland are recruited as control group. Using SPSS 17 software, the univariate and multivariate analysis are calculated and correlation between these variables is analysed.

Results: A total of 40 patients were recruited into this study. Mean age of our study group were 48.5 years. There were slight male preponderance. The mean tumour volume in pre-operative group were 10.58cm³ and in post-operative arm were 3.1cm³. There were 70% reduction in tumour volume post operatively. The mean serum prolactin level in preoperative patients was 457mIU/l and 297mIU/l in post operative group. There was 65% reduction in serum prolactin post operatively.

The mean pituitary stalk angle in preoperative patients was 93.45 degree and in post- operative arm were 51.45 degree. The mean stalk angle in control group was 50.4 degree. Hence, there were close to 98% reduction in stalk angle post surgery. Our study had positive correlation coefficient values for relationship between tumour volume and serum prolactin level and between pituitary stalk angle displacement and serum prolactin level. However, this value is statistically not significant (P value > 0.05).

Conclusion: Pituitary macroadenoma is a common neoplasm, amounting to about 15% of all intracranial tumours. The raised serum prolactin in these macroadenomas could be either due stalk effect or prolactin secreting tumour. In our study, we were unable to find a statistically significant correlation between the raised serum prolactin with the tumour volume, its extent of growth or the degree of angulations of pituitary stalk. However, based on previous studies done, we

still accept that hyperprolactinemia exceeding 3000mIU/l to be considered as functioning tumour. We conclude that mechanisms other than pituitary stalk compression must be considered as the cause of secondary hyperprolactinaemia.

Supervisor:

Dr Azmi Alias

Professor Dato' Dr Jafri Malin Abdullah

PERITUMOURAL OEDEMA IN MENINGIOMA: IT'S ROLE IN PREDICTING HISTOPATHOLOGICAL GRADING AND COMPLETENESS OF RESECTION IN PATIENTS UNDERGOING SURGERY FOR INTRACRANIAL MENINGIOMA

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MMed (Neurosurgery)

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Introduction: Meningioma constitutes approximately 33.8% of all primary intracranial tumours, making it the most common primary intracranial tumour in adults. It is thought to arise from arachnoid cap cells, making its distribution varied. Histologically it can be broadly divided into 3 grades designated by World Health Organisation International Agency for Research on Cancer subcommittee. Low grade meningioma (grade 1) shows benign histological characteristics and is generally accepted as benign, complete resection is accepted as curative. While high grade meningioma (grade 2 and 3), follow a more aggressive path. Grade 2 has an 8 fold chance of recurrence, while studies have placed survival of grade 3 meningioma patients at only 2 years. The management of these 2 groups differ as high grade meningioma requires adjuvant therapy after resection. Peritumoural brain oedema is a commonly seen feature of meningioma; there have been several studies which looked into its association with histological grading of meningioma, there have been mixed results.

Objectives: The objectives of this study were to identify whether volume of peritumoural oedema on preoperative MRI may be used to predict the histological grade of the tumour of patients undergoing surgery for intracranial meningioma. Also to determine the association between the presence of peritumoural oedema on pre-operative MRI and the presence of residual tumour on routine post-operative MRI in cases where gross total resection of the tumour was thought to have been achieved during surgery

Methods: This cross sectional observational study was conducted in Hospital Kuala Lumpur from 2011 to 2012, data collected included those who underwent surgery for meningioma from 2008 to 2012 and fulfilled the enrolment criteria's. Sample size was calculated as 18 for each for low grade and high grade meningioma. Data collection was performed by single investigator using a standardized data collection performa. Magnetic resonance imaging images

were interpreted for oedema index using the magnetic resonance imaging images prior to surgery and for residual tumour using the magnetic resonance imaging images after surgery, which was at 12 weeks for the prospective arm. Statistical interpretation for statistical correlation was performed using Statistical Package for the Social Sciences version 21.

Results: There were a total of 168 cases of intracranial meningioma operated upon in Hospital Kuala Lumpur for the study period. Of which 36 patients were randomly enrolled into the study after fulfilling the enrolment criteria's. The median age was 50 years, male to female ratio was 1:3.5, tumours were located predominantly in the convexity, only 1/3 of patients had seizures, 69.4% of patients had peritumoural brain oedema and 75% of cases were reported as gross resection. Of those patients reported as gross total resection 40.7% were noted to have residual tumour of follow up magnetic resonance imaging. Univariate analysis showed statistically significant association between peritumoural brain oedema ($P = 0.027$) and tumour volume ($P = 0.001$) with high grade meningioma, however multivariate analysis did not show any association. There was no association between judgement of tumour resection by the surgeons and peritumoural brain oedema noted.

Conclusion: Univariate analysis showed significant association of peritumoural brain oedema and tumour volume with high grade meningioma. However this statistical significance was lost after multivariate analysis was done. Despite this the odds ratio for peritumoural brain oedema remained high and the p value for tumour volume was borderline ($P = 0.061$). These 2 factors do have some contribution to the tumour grade and should be included in further studies which look into the prognosis of meningioma.

Supervisor:

Datuk Dr Mohammed Saffari Mohammed Haspani

Co-Supervisor:

Dr Norzaini Rose

Dr Suryati Mohd Yusoff

A CORRELATION OF PUQE-24 SCORE WITH BIOCHEMICAL DERANGEMENT IN PATIENTS WITH NAUSEA AND VOMITING IN EARLY PREGNANCY : A PILOT STUDY

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Introduction: Nausea and vomiting in pregnancy is a continuum that ranges from mild discomfort to significant morbidity. Systematic assessment with the use of the Pregnancy-Unique Quantification of Emesis/Nausea (PUQE) index and timely treatment using evidence-based protocols

can decrease the time that many women spend using treatment recommendations that are inadequate. This study was carried out with the intention to try to validate the PUQE score by correlating it to the possible biochemical derangement that may occur at each level of the severity grading based on the PUQE-24 index. If there is significant correlation, a clinician will be able to immediately start management of patients with NVP just based on the PUQE-24 score without having to await for the biochemical results. Early intervention in cases of NVP has been proven to have a better outcome.

Objectives: To determine the correlation between the severity score by PUQE-24 index and biochemical derangement occurring in patients with nausea vomiting in early pregnancy among women in Hospital Raja Perempuan Zainab II (HRPZ II).

Methods: A prospective cross sectional study over a 1 year span, March 2012 to February 2013 of women in early pregnancy who were admitted to the Gynaecology ward of HRPZ II for nausea and vomiting in pregnancy was conducted. The patients recruited were aged 18 years and above, any gravidity, gestation of less than 16 weeks on the first admission with singleton pregnancies, had a spontaneous conception and had no known medical illnesses prior to pregnancy. They were assessed using the PUQE-24 index questionnaire and given a score which denoted the severity and blood was sent for hematocrit level, serum electrolytes, liver function tests and thyroid function tests. Patients who were newly diagnosed to have medical conditions based on the investigation results were excluded from the study. Data was compiled through a clinical research form for analysis and data analysis was carried out with SPSS version 20.

Results: A total of 60 patients were recruited in this study. 10 patients were subsequently excluded from the study as they were shown to have hyperthyroidism after reviewing the serum thyroid function results. Based on the data collected, analysis showed that the age among the subjects recruited ranged between 18 – 40 years with majority of the patients aged between 18-27 years ($n = 33$), 12 patients aged between 28–37 years with a minority aged 38 years and above ($n = 5$). It was normally distributed with a mean of 24.6 years and a standard deviation of 5.6 years. In terms of gravidity, majority of patients were between gravida 1 to 3, amounting to 45 patients (80%) and the remaining 5 were gravida 4 and above (20%). The PUQE-24 index score showed a normal distribution among the study population. 74% ($n = 37$) of patients were noted to have moderate NVP with PUQE-24 scores between 7–12 where 14 patients (37.8%) had a PUQE-24 score of 9, 7, and 8 patients had scores of 8 and 10 respectively. 9 patients (18%) had scores of 13 or more while 3 (6%) had scores of 6 or less. The mean score was 10.0 with a standard deviation of 2.2. The serum potassium levels among the patients studied showed 62% ($n = 31$) having hypokalemia with potassium levels between 3.0-3.4mmol/L. 6% ($n = 3$) were between 2.5-2.9mmol/L. Of these 34 patients, 24 patients were in the moderate NVP group while 10 were in the severe NVP group. In those with severe NVP (scores of 13 or more),

70% (n=7) had potassium levels between 3.0-3.4 mmol/L while 30% (n = 3) were between 2.5-2.9 mmol/L. The mean potassium level was 3.3 mmol/L. This shows that majority of those with moderate NVP and all those with severe NVP, by PUQE-24 score had hypokalemia. There was a significant negative correlation between PUQE-24 index and serum potassium level based on Pearson's correlation coefficient of $r = -0.62$ and a P value of < 0.001 . The hematocrit levels ranged between 33.9% to 45.0% with a mean of 39.0% and standard deviation of 2.5%. Among the study population, 66% (n = 33) were within the normal range of 35 to 39%. 32% (n = 16) had hematocrit levels of 40% or more indicating hemoconcentration. In relation to the PUQE-24 index, among those with moderate NVP, 84% (n = 31) had hematocrit levels between 35–39%, which is within normal range. The remaining 16% had hemoconcentration with hematocrit levels of 40% or more. Patients with mild NVP had normal hematocrit levels. However, in the severe NVP group, all 10 patients within this group showed hemoconcentration with hematocrit levels of 40% and above. The Pearson's correlation coefficient showed a significant positive correlation between PUQE-24 index and haematocrit levels (PCC $r = 0.54$) with $P < 0.01$. The urine ketone levels ranged between 1+ to 4+. From the total of 50 patients, 50% (n = 25) had demonstrated a urine ketone of 3+. 30% (n = 15) had urine ketone 4+, while 10 patients had ketone 2+. Only 2% (n=1) had a ketonuria of 1+. The patients who were classified as having mild NVP had ketones of 2+ and below. Amongst those with moderate NVP, which made up majority of patients (n = 37), 23 patients had urine ketone 3+, while 7 each had ketones of 2+ and 4+ respectively. Those patients with severe NVP, amounting to 10 patients, had urine ketone levels of 3+ to 4+; 4+ being 80% of the total. Significant positive correlation between PUQE-24 scores and urine ketone levels were demonstrated by Pearson's correlation coefficient and 2-tailed test (PCC $r = 0.57$, $P < 0.01$).

Conclusion: There is significant evidence of biochemical derangement occurring, in reference to lowered potassium levels, raised hematocrit levels and urine ketone levels, in correlation to the severity of NVP based on the PUQE-24 scores. Hence, by answering the PUQE-24 questionnaire, one can predict the severity and hence plan the suitable therapy for patients with NVP due to its significant biochemical correlation.

Supervisor:

Professor Dr Mohd Shukri Othman

Co-Supervisor:

Dr. Zainal Abidin Hanafiah

THE PREVALENCE AND RISK FACTORS OF URINARY INCONTINENCE AT 3 MONTHS POSTPARTUM IN HOSPITAL SULTANAH NURZAHIRAH(HSNZ) KUALA TERENGGANU

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Introduction: Urinary incontinence is defined by International Continence Society as the complaint of any involuntary leakage of urine. It is a common condition with impact on the women physical, social and psychological.

Objectives: The aims of the study was to determine the prevalence of urinary incontinence three months postpartum, and its associated risk factors in Hospital Sultanah NurZahirah Kuala Terengganu.

Methods: A cross sectional descriptive analysis was performed on 388 women who delivered in Hospital Sultanah NurZahirah. Data was collected using a structured questionnaire. Patient contacted three months post-partum via telephone and asked to answer the questionnaire. It has three part, part 1 on demographic data of respondent that include age, education, occupation, and parity. Part 2 and 3 were validated Bristol Female Lower Urinary Tract symptoms(BFLUTS). It consist of 34 questions that address and assessment that relating to incontinence and other urinary symptoms, sexual function and aspect of quality of life. The questionnaire was translated to local language. The analysis was performed using Chi Square X2 test and multiple logistic regression.

Results: The overall prevalence of urinary incontinence three months post-partum was 28.9%. The prevalence of stress incontinence was 53.6%, urge incontinence 21.4 %, and mixed incontinence 25.0%. The factors that influence overall urinary incontinence were parity. Stress incontinence was significantly influenced by parity, educational, occupational and episiotomy. No significant association with type of delivery, age, and heavy lifting. The only association of urge incontinence was parity. Mixed incontinence was significantly associated with parity, type of delivery, education and episiotomy. In regards to women who seek treatment for their urinary problem, only 18 percent of them did so possibly due to their embarrassment to discuss about the issue with medical practitioners.

Conclusion: The prevalence of urinary incontinence three months postpartum was 28.9% which is similar to previous studies. Stress incontinence had the highest prevalence followed by mixed and urge incontinence. The percentage of incontinence women and treatments available for urinary incontinence.

Supervisor:

Professor Dr Nik Mohamed Zaki Nik Mahmood

Co-Supervisor:

Dr Wan Abu Bakar Yusof

A COMPARATIVE STUDY ON PAIN SCORE, ANXIETY LEVEL AND VITAL SIGNS DURING PHACOEMULSIFICATION USING COMBINATION OF TOPICAL ANAESTHESIA AND CRYOANALGESIA VERSUS TOPICAL ANAESTHESIA

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Introduction: Topical anaesthesia has become a popular choice of anaesthesia during phacoemulsification as it has no risk of the needle techniques. Phacoemulsification performed using topical anaesthesia has acceptable pain control. However, a certain percentage of patients still perceive pain during the procedure. There are ongoing studies to find additions to the topical anaesthesia to increase patient's comfort level during phacoemulsification. Cryoanalgesia is the relief of pain by application of cold. There is no reported data on the effect of cryoanalgesia as an adjunct to topical anaesthesia on pain control during phacoemulsification so far.

Objective: To evaluate the effect of cryoanalgesia as an adjunct to topical anaesthesia on pain score, anxiety level and vital signs during phacoemulsification.

Methodology: Patients with senile cataract planned for phacoemulsification who met the inclusion and exclusion criteria were recruited. Patients were randomised into two groups – topical anaesthesia only and topical anaesthesia with cryoanalgesia. Before the start of surgery, patient's blood pressure, heart rate and anxiety level were assessed. Phacoemulsification was performed by a single surgeon. The group using topical anaesthesia only used balanced salt solution at operation theatre temperature. The group using topical anaesthesia with cryoanalgesia had a refrigerated cold eye mask placed over the eye for 5 minutes prior to the surgery and cooled balanced salt solution of around 2°C to 8°C for ocular surface irrigation. Intraocular irrigation was done with balanced salt solution at operation theatre's temperature. Patients rated intraoperative pain score immediately after the surgery. Patient's blood pressure, heart rate and anxiety level were assessed again postoperatively.

Result: A total of 60 patients were recruited with 30 subjects in each arm. Pain score was significantly lower in the group using topical anaesthesia with cryoanalgesia. There was no significant difference in anxiety level between the groups. Preoperative systolic blood pressure was significantly higher in the group using topical anaesthesia only but there was no significant difference in the postoperative systolic blood pressure between the groups. There was no significant difference in the preoperative diastolic blood pressure between the groups. However, postoperative diastolic blood pressure was significantly higher in the group using topical anaesthesia with cryoanalgesia. Heart rate was significantly higher in the group using topical anaesthesia before operation. However,

there was no significant difference in the postoperative heart rate between the groups.

Conclusion: Phacoemulsification using topical anaesthesia with cryoanalgesia has significantly improved patient's level of pain. Addition of cryoanalgesia to topical anaesthesia still produces a safe systemic physiological stress response (anxiety level, blood pressure and heart rate).

Supervisor:

Dr Adil Hussein

Co-Supervisor:

Associate Professor Dr Shamsul Kamaruljan

OPTIC NERVE FUNCTIONS AND VISUAL EVOKED POTENTIAL AFTER ACUTE ATTACK OF OPTIC NEURITIS

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Introduction: Optic neuritis (ON) is an inflammation of the optic nerve. In the absence of signs of multiple sclerosis or other systemic disease, it is referred to as an idiopathic or monosymptomatic. Optic nerve function parameters; visual acuity, visual field, colour vision, and contrast sensitivity are affected in patients with ON. Most patients with typical optic neuritis have excellent recovery of visual acuity. However the abnormality of other visual functions may persist. Visual Evoked Potential (VEP), an electrophysiological test is used to detect functional loss in visual pathway especially pre-chiasmatic lesions.

Objectives: To determine optic nerve functions and visual evoked potential after an acute attack of optic neuritis. The correlation of the optic nerve functions with VEP parameters were also evaluated.

Methods: A cross sectional study was conducted at eye clinic, Hospital Universiti Sains Malaysia (HUSM) between September 2011 and February 2013. Twenty ON patients and twenty control subjects that fulfilled the inclusion and exclusion criteria were recruited. Ocular examination including visual acuity, colour vision, contrast sensitivity, visual field and pattern VEP were performed after 3 months of acute attack of ON. The comparison of optic nerve functions and VEP parameters between optic neuritis and control group were analysed using Independent T test or Mann-Whitney test. Correlation between the optic nerve functions and VEP parameters were analysed using Pearson correlation coefficient or Spearman's rho.

Results: Mean duration between recruitment process and first episode of optic neuritis was 9.7 SD 6.6 months. Optic nerve functions in optic neuritis were found to be significantly decreased compared with control group. However, there was no significant differences were detected in VEP latency

and amplitude between optic neuritis and control group. VEP amplitude using checkerboard 60 minute of arc (VEP-P100AC1) demonstrated negative correlation with logMAR visual acuity score (Spearman's $\rho = -0.702$, $P = 0.001$). There were fair correlation between VEP latency using checkerboard 60 minute of arc (VEP-P100C1) and colour vision (Pearson $r = 0.517$, $P = 0.020$). Contrast sensitivity at spatial frequency 3CPD, 12CPD and 18CPD had fair correlation with VEP-P100AC1. However contrast sensitivity at spatial frequency 6CPD had correlation with VEP latency using checkerboard 15 minute of arc (VEP-P100C2). Mean deviation (MD) and pattern standard deviation (PSD) had fair correlation with VEP-P100AC1 (Spearman's $\rho = +0.560$, $P = 0.010$ and Spearman's $\rho = -0.475$, $P = 0.034$ respectively).

Conclusion: After an episode of optic neuritis, there were significant reduction in optic nerve functions. Interestingly, there was no significant difference in VEP amplitude and latency between patient with optic neuritis and control. Fair to good correlation found between VEP amplitude with optic nerve functions.

Supervisor:

Associate Profesor Dr Wan Hazabbah Wan Hitam

ASSOCIATION OF TRIPLE VESSELS CORONARY ARTERY DISEASE AND RETINAL NERVE FIBER LAYER THICKNESS

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Introduction: Vascular insufficiency of the optic nerve head has been postulated to cause autoregulation dysfunction and retinal axonal damage. Atherosclerosis is one of the main pathological processes causing systemic circulatory disturbance. Atherosclerosis commonly affects coronary, cerebral, and peripheral vascular system. Triple vessels coronary artery disease (3VCAD) is the extensive systemic atherosclerosis. Thus, it is worthwhile to look at the effect of 3VCAD on retinal nerve fiber layer (RNFL) thickness.

Objective: To determine retinal nerve fiber layer (RNFL) thickness in triple vessels coronary artery disease patients and to compare with RNFL thickness in control group

Methods: A cross sectional study was conducted between April 2012 and September 2013 involving patients with 3VCAD attending cardiothoracic clinic of two tertiary hospitals in Malaysia. The diagnosis was based on cardiac angiogram findings. Controls were also recruited. The presence of systemic diseases such as hypertension, diabetes mellitus, hyperlipidaemia were obtained from patient's medical record. The patients were also asked on their smoking habit and exercise. Complete ophthalmic evaluations were conducted including Humphrey visual field analysis. RNFL thickness

and optic nerve head (ONH) parameters were done using Cirrus OCT. Statistical analysis was done using Predictive Analytic Software (PASW) 20. Independent t test was used to determine the RNFL thickness and ONH parameters between the two groups.

Results: A total of 59 3VCAD patients and 60 controls were recruited. Patients with 3VCAD were older with male predisposition. Most of 3VCAD patients were also hypertensive (88.1%), hyperlipidaemic (89.8%), diabetic (44.1%). There were active and ex-smokers (62.7%). Patients with 3VCAD were significantly taller ($P = 0.003$) and heavier ($P = 0.034$) than controls. Mean RNFL was statistically significant thinner in patients with 3VCAD compared to controls ($91.29 \mu\text{m}$ vs $100.20 \mu\text{m}$, $P < 0.001$). Patients with 3VCAD also have larger mean vertical cup-disc ratio ($P < 0.001$) and higher mean baseline IOP (16.1 mmHg vs 14.68 mmHg , $P = 0.011$).

Conclusions: Thinner RNFL in 3VCAD patients suggested the possible effect of insufficiency of ONH blood supply due to atherosclerotic changes. A vigilant ophthalmic screening in patients with 3VCAD is recommended especially those with associated ocular disease to prevent further insult to the ONH.

Supervisor:

Associate Professor Dr Liza-Sharmini Ahmad Tajudin

Co-Supervisor:

Mr Ahmadi Salleh

Datuk Dr Zurkanai Yusof

THE EFFECT OF MOMETASONE FUROATE NASAL SPRAY ON NASAL OBSTRUCTION SYMPTOM AND BLOOD OXYGENATION IN ALLERGIC RHINITIS PATIENTS

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Introduction: Allergic Rhinitis (AR) is a disease which is widely spread on the world and causing symptoms like nasal discharge, itchiness and also nasal blockage which impaired the quality of life of most patients depending on severity. However, the symptoms are treatable with the use of intranasal steroid. Many studies have shown that AR patients are having persistent nasal blockage which can be considered part of the upper airway tract. In theory, any obstruction to the upper airway may affect the blood oxygenation to the lung.

Objective: In this study, the objective is to elicit the influence of nasal obstruction to blood oxygenation and its reversibility using intranasal steroid to improve the blood oxygenation and also symptoms of nasal obstruction.

Methods: This study was conducted from November 2012 until October 2013 involving 33 AR patients aging

from 18 to 35 year-old. All subjects had moderate to severe nasal obstruction based on Visual Analogue Scale (VAS) and had arterial blood gases (ABG) taken from their radial artery. They were started with Mometasone furoate nasal spray (MFNS) two puff twice a day for two weeks. A repeated assessment of nasal obstruction symptom and ABG was done after two weeks. Four parameters were compared pre and post medication including VAS of nasal obstruction, partial oxygen arterial pressure (PaO₂), partial arterial carbon dioxide pressure (PaCO₂) and oxygen saturation (O₂ Saturation).

Results: All parameters showed significant difference between pre and post medication. VAS difference was significant ($P < 0.01$), PaO₂ difference was significant ($P < 0.01$), PaCO₂ was significant ($P = 0.029$) and O₂ Saturation was also significant pre and post medication ($P < 0.01$).

Conclusion: Therefore we found that a comprehensive treatment of nasal obstruction using MFNS will help to improve nasal obstruction symptom and also blood oxygenation.

Supervisor:

Dr Ramiza Ramza Bin Ramli

Co-Supervisor:

Associated Prof Dr Rosdan Bin Salim

Dr Amirozi Bin Ahmad

A STUDY ON THE ASSOCIATION BETWEEN GLYCEMIC CONTROL AND SENSORINEURAL HEARING LOSS AMONG TYPE 2 DIABETES MELLITUS

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Introduction: Diabetes related hearing loss had been debating for many years with no clear conclusion. It was postulated that microvascular complication of diabetes will also affect the organ of hearing particularly cochlea leading to hearing loss. However the facts or information regarding whether the good control of diabetes mellitus can avoid this complication is deficient.

Objectives: The aim of this study is to determine prevalence of SNHL in type 2 diabetic patients and to determine the association between glycemic control and SNHL, whether the good glycemic control can reduce the incidence of hearing loss. Other associated factors of SNHL among type 2 diabetic patients also been studied.

Methods: A cross-sectional case study was conducted in Otorhinolaryngology clinic, USM from Disember 2012 to June 2013. Previously diagnosed type 2 diabetes Mellitus between the age of 18 to 60 years attending for routine checkup were consecutively selected for the study. They were randomized and 138 patients were selected from them. Written consent

for the study was obtained. Patients with occupational noise exposure, ototoxic and chemotherapy drug usage, severe head injury, family history of deafness, presence of ear infection, ear surgery, head or neck radiotherapy, upper respiratory tract infection in the past 1 month were excluded from the study. Detailed information regarding the age, sex and duration of diabetes and treatment history, was obtained from patient's medical record. They were divided into two groups based on HbA1C level. HbA1C ≤ 7 were grouped as controlled DM while HbA1C > 7 were grouped as uncontrolled DM. Pure Tone Audiometry was done to determine hearing function, degree, type and configuration of hearing loss.

Result: The prevalence of SNHL among type 2 DM was 29% (95%CI, 21%,37%). The prevalence of SNHL in controlled diabetic patients was 17% (95% CI: 7%,27%) while the prevalence of SNHL in uncontrolled diabetic patients was 36% (95% CI: 26%,47%). Uncontrolled DM showed a significant association with sensorineural hearing loss in type 2 Diabetes Mellitus patients (P value= 0.014). The degree of hearing loss in uncontrolled DM was also found to be higher as compared to controlled diabetic group. However the duration of Diabetes Mellitus had no significant correlation with hearing loss. The presence of diabetic nephropathy was significantly increase the risk of getting hearing loss (P value = 0.002).

Conclusion: Type 2 Diabetes Mellitus was associated with progressive bilateral mild to moderate high frequency hearing loss. The prevalence of sensorineural hearing loss in diabetic patients was 29% which was consistent with other studies. Poor glycemic control was significantly associated with high prevalence of sensorineural hearing loss among type 2 diabetic patients. Thus hearing screening was justified especially for uncontrolled diabetic patients.

Supervisor:

Associate Professor Dr Mohd Khairi b Md Daud

Co-Supervisor:

Associate Professor Dr Rosdan Salim

Dr Nani bt Draman

SAFE WORKING ZONE FOR LUMBAR INTERBODY FUSION THROUGH LATERAL TRANSPSOAS APPROACH: MORPHOMETRIC STUDY BASED ON MRI OF LUMBAR SPINE

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Introductions: Transpsaos lumbar interbody fusion has been shown to be safe and provides alternative for lumbar fusion. However, its use in the Asian population, the adjacent neurovascular structures may not allow a safe passage for this procedure. We did a morphometric study based on MRI of lumbar spine at L3/L4 and L4/L5 levels to look into the

feasibility of this approach in our population.

Objectives: To determine anatomical position of lumbar plexus and major blood vessels in relation to vertebral body and anterior edge of psoas muscle at L3/L4 and L4/L5 via MRI and to delineate a safe working zone for lumbar interbody fusion using lateral transpsoas approach in Malaysian population. [Safe working zone is defined as area in psoas muscle not crossed by lumbar plexus for left sided approach and between lumbar plexus and major blood vessels for right sided approach].

Methods: This was a cross sectional study of 100 patients where relevant parameters were measured from axial MRI images and analysed, including the psoas muscle and vertebrae end plate diameters, lumbar plexus and psoas muscle distance, lumbar plexus and vertebra body distance and vena cava to the anterior vertebrae body diameters. Safe working zone for both the vertebrae levels as well as difference in male and female at both right and left sided approach was determined by analyzing these measurements.

Results: There were 100 patients included in this study, 52 were male and 48 were female with mean age group of 61 years. Safe working zones were calculated and it was statistically significant between L3/L4 and L4/L5 in both male and female patients and they did show significant variance between right and left side mid disc level.

Conclusion: Transpsoas approach for lumbar interbody fusion can be done in our populations with some amount of precautions as our study shows that this approach is feasible for L3/L4 level in both male and female patients through right as well as left sided approach but at the level of L4/L5 level, it is only can be done safely over the left side as retroperitoneal vessels anatomical location makes right sided approach not safe to be attempted for our population.

Supervisor:

Associate Professor Dr Imran Yusof

Co-Supervisor:

Associate Professor Dr Mohd Shafie Abdullah

EFFECTIVENESS OF HOME-BASED PHYSIOTHERAPY PROGRAMME FOR CHRONIC ANTERIOR CRUCIATE LIGAMENT DEFICIENCY

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Introduction: A prospective, interventional study to assess effectiveness of a new modified home-based physiotherapy programme for chronic anterior cruciate ligament (ACL) deficient patient.

Objectives: To prospectively compare quadriceps and hamstring muscles strength, the affected knee joint stability, and subjective patients function pre and post home-based

physiotherapy programme for chronic ACL deficient knee patients.

Methods: Twenty patients with chronic ACL injury underwent a six weeks home-based physiotherapy based on a new modified regime of exercises. Patients were taught the exercises technique during first session, and were given an instructional CD for guide at home. Another session was held after three weeks home exercises to ensure that patient performing the correct technique. Muscle strength, knee stability, and patient functions were assessed before starting physiotherapy, and after completion of the programme for 6 weeks.

Results: Both quadriceps and hamstring muscles strength that measured at 2 different speed (180° and 300° per second) showed significant improvement after minimum of 6 weeks home-based physiotherapy. There was statistically significant difference before and after ($P < 0.001$). Patients function was significantly improved after performing the home-based exercises regime from mean score 69.5 to 80 ($P < 0.001$). KT1000 result was unsurprisingly not improved after the exercise, confirming that physical therapy does not affect the passive knee stability.

Conclusion: This study shows that the new regime of physiotherapy that was performed by patients at home with minimal intervention by physiotherapist, and without using any exercise equipment is effective to improve muscle strength and patient function in chronic ACL deficient knee. Passive knee joint instability does not correlate with muscle strength and patient function. Whether this home-based physiotherapy may reduce requirement for ACL reconstruction may need further investigation.

Supervisor:

Dr Tengku Muzaffar Tengku Shihabudin

Co-supervisor:

Dr Mohd Nidzam Jawis

INCIDENCE OF DEEP VEIN THROMBOSIS IN PATIENT WITH TRACTION FOR LOWER EXTREMITIES FRACTURE DISTAL TO HIP

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Introduction: Deep vein thrombosis (DVT) is a known complication of trauma particularly with lower extremities injury. The use of traction as a temporary immobiliser is a common practice while waiting for definitive treatment for the patient with lower limb fracture. The use of traction, either skin or skeletal traction make the patient bed ridden and increase the risk of DVT. The delay of surgical intervention for patients with acute trauma is even worse, making the risk for incidence of DVT become greater and may end up with acute

pulmonary embolism which is a life threatening condition. It happened despite the use of antithrombotics prophylaxis, as reported in western countries. The use of antithrombotic prophylaxis however may increase the risk of bleeding during the surgery. The risks and benefits of using these drugs have to be balanced in managing the patient with traction to avoid unnecessary complication.

Methods: This is a cross sectional study, conducted in Hospital Universiti Sains Malaysia, Kubang Kerian Kelantan. Fifty patients were enrolled in this study, who presented to our hospital with lower limb fracture distal to hip and was put on tractions while waiting for definitive surgical treatment. Patients who were on traction for more than 48 hours were examined for DVT by color Doppler ultrasound on the affected limbs. The primary outcome is to determine the incidence of DVT in patients with lower limb fracture on tractions. The secondary outcome is to compare the association of type of traction and incidence of DVT and also the association of location of fracture between femur and tibia to the incidence of DVT.

Results: Of the 50 patients enrolled in this study, only one patient (2%) had positive evidence of DVT on Doppler ultrasound. There is no significant association between type of traction used and incidence of DVT with p value is 1. There is also no significant association between fracture site and incidence of DVT.

Conclusion: The incidence of DVT in patient immobilised with traction for at least 48 hours is relatively low as compared to western countries. With proper monitoring and educational to the patient the use of traction is safe and the use of pharmacological prophylaxis of DVT may not be compulsory in our population, however the decision has to be made after taking all the consideration of other risk factors.

Supervisor:

Dr Emil Fazliq Mohd

Co-Supervisor:

Dr Ahmad Helmy Abdul Karim

CLINICAL AND FUNCTIONAL OUTCOME OF HAEMOPHILIC JOINT USING RHENIUM SYNOVECTOMY – 6 MONTHS FOLLOWUP

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Introduction: This is a retrospective review of clinical and functional outcome in haemophilia patients with recurrent haemarthrosis who have undergone radiosynovectomy in Hospital Kuala Lumpur. This study was conducted by the Orthopaedics and Traumatology Department in Hospital Kuala Lumpur in collaboration with the National Blood Centre, with the support from Department of Nuclear Medicine and

Department of Pharmacy, Hospital Kuala Lumpur. A common manifestation of haemophilia patients is recurrent episodes of haemarthrosis which is not only an acute problem but has impact on the subsequent development of chronic haemophilic arthropathy. Radiosynovectomy has been in use for the past 50 years to effectively ablate the synovium using radio-isotopes. This study looks into the outcome of haemophilic patients post radiosynovectomy in a single centre in Malaysia.

Objectives: This study aims to evaluate the clinical and functional outcome of patients post rhenium radiosynovectomy. The clinical outcome is measured by number of haemarthrosis episodes and radiographic scoring pre and post radiosynovectomy. The radiographic scoring is based on the Arnold –Hilgartner scale of plain radiographic evaluation of joints. The functional outcome is based on the World Federation of Haemophilia (WFH) joint scoring system which includes chronic pain, swelling, muscle atrophy, axial deformity, crepitus on motion, instability, range of motion and flexion contracture. The WFH score is then calculated and compared to identify functional outcome pre and post radiosynovectomy.

Methods: the study period was from 1st of January 2012 till the 30th of June 2013. 34 male patients were recruited (mean age of 17.79, range 4–34 years), in which 31 patients who are diagnosed with Haemophilia A and 3 patients with Haemophilia B) with 45 joints involved (25 knee joints, 10 ankle and 10 elbow joints). The haemophilic patients were subjected to radiosynovectomy in stages from June 2012 till June 2013. The numbers of haemarthroses were tabulated from the National Blood Centre Clinic notes and the patients self recorded haemophilic diary pre and post radiosynovectomy. The joints were assessed pre radiosynovectomy using the World Federation of Hemophilia (WFH) joint scoring system and Arnold and Hilgartner radiographic joint assessment scale. The joint were reassessed again 6 months post radiosynovectomy using the WFH joint scoring system and Arnold & Hilgartner radiographic joint assessment scale. The results were then tabulated and statistical analysis was done utilizing the Wilcoxon Signed Rank Test.

Results: The number of haemarthrosis showed significant difference between pre and post radiosynovectomy (P value < 0.05). The 45 joints that were graded according to the Arnold and Hilgartner are as follows. Stage 0–2 joints (4.4%), Stage I – 5 joints (11.1%), Stage II – 11 joints (24.4%), Stage III – 15 joints (33.3%), stage IV- 11 joints (24.4%) and stage V – 1 joint (2.2%). However, there were no changes in the radiographic findings based on the Arnold and Hilgartner scoring system pre- and post-radiosynovectomy. The WFH score for knee (n = 25) and ankle (n = 10) joint showed significant reduction (P value < 0.05) where as the WFH score for the elbow (n = 10) did not show any significant reduction. (P value = 0.18).

Conclusion: The use of radiosynovectomy in managing haemophilia patients results in lower incidence of haemarthroses. The short term outcome of radiosynovectomy shows favourable result. With reduction of haemarthrosis

episodes, the deleterious effects of hemoglobin to the articular cartilage can be prevented thus delaying the development of chronic haemophilic arthropathy. There was no evidence of radiographic changes in the pre and post radiosynovectomy. There was however evidence of improvement in pain, swelling, range of motion and contracture in the WFH joint scoring system except the elbow joint.

Supervisor:

Dr Mohammad Paiman

Co-Supervisor:

Dr Abd. Razak bin Mohamad

RISK OF SEIZURE RECURRENCE AFTER FIRST NONFEBRILE SEIZURE; A STUDY FROM KELANTAN

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Introduction: Seizures are common and occur in about 10% of all children. Seizure recurrence occurred in 30% to 70% of the patients after first nonfebrile seizure and mean time for seizure recurrence was within 6 months up to 2 years based on previous study. Those who have a second non febrile seizure appeared more likely to have further seizures thereafter, with third and fourth seizures occurring in three-quarters of this group. However there is still no local study ever being done in Malaysia.

Objectives: The objective of this study was to determine the seizure recurrence rate following the first episode of non febrile seizure in children with first episode of nonfebrile seizure and to determine the recurrence rate of seizure recurrence and identify the risk factors for second episodes of seizure within 12 months following the first episode of nonfebrile seizure in children.

Methodology: This retrospective cohort study has been conducted in HUSM and HRPZ II. The participants were all children with first episode of nonfebrile seizures who have attended paediatric clinic, admitted to either hospitals or referral cases from district hospital for EEG. The participants were identified through ward registry in paediatric ward and hospitals records in both HRPZ II and HUSM. The inclusion criteria were all children developed first nonfebrile seizure between January 2010 till July 2012, age between 1 month to 12 years. Patients with status epilepticus and patients with a cluster of seizures occurring within 24 hours were also included in this study.

Results: A total of 171 patients of first nonfebrile seizures were included in this study. Seizure recurrence occurred in 118 (69%) of children and median time for seizure recurrence was 36.0 days. Mean aged was 3.4 years for seizure recurrence and 4.1 years with non seizure recurrence group. The overall Kaplan Meier estimated risk of seizure recurrence

was 48% (SE 3.8) at 1 month, 60% (SE 3.7) at 3 months, 64% (SE 3.7) at 6 months and 69% (SE 3.5) at 12 months. Multiple Cox proportional hazard model showed only one significant risk factor for seizure recurrence which was abnormal EEG.

Conclusion: We conclude that the risk of seizure recurrence after first episode of nonfebrile seizure in our study was 69% still within range from previous studies. An abnormal EEG is a risk factor for seizure recurrence in children with first episode of nonfebrile seizure.

Supervisor:

Dr Salmi Abd Razak

Co-Supervisor:

Dr Nor Azni bin Yahaya

Associate Professor Dr Ariffin Nasir

CLINICAL MONITORING PARAMETERS AND MRI T2* VALUE IN ASSESSMENT OF CARDIAC IRON OVERLOAD IN THALASSEMIA PATIENT

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Introduction: Cardiomyopathy is a leading cause of mortality in transfusion dependent thalassemia. According to Malaysian Thalassemia Registry in 2009, about 3310 out of 4541 patients are from both β -thalassemia major and HbE β -thalassemia groups. Cardiac complication is reversible if iron chelating therapy was institutes appropriately but become irreversible if overt heart failure develop. In 2005, Malaysian government had initiated National Thalassemia and Control Programme to provide free iron chelating agent. MRI T2* to detect myocardial iron loading also has recently available in few local facilities and there is no Malaysian data on cardiac iron loading assess by this modality.

Objective: This study aimed to determine cardiac MRI T2* value and its relationship with clinical monitoring parameters in transfusion dependent thalassemia patients.

Methods: This study is a cross sectional study that been conducted in Hospital Sultanah Bahiyah, Alor Setar. Subjects were patients attending Thalassemia Clinic, in HSB who are fulfilled inclusion and exclusion criteria and did MRI T2* either in National Heart Institute (IJN) or Seberang Jaya Hospital. Clinical parameters studied including mean serum ferritin and echocardiography parameters. Multiple linear regression was applied to determine the relationship between clinical parameters and MRI T2* value.

Results: Cardiac MRI T2* was in the range of 6.1 – 57.8 ms with mean of 28.2 (SD 13.3) Myocardial siderosis was detected in 32.6% of patients. There were significant correlation between LVESV and LVESV index with cardiac MRI T2* value. There was no significant different in cardiac MRI T2* results between β -thalassemia major and HbE

β -thalassemia group. However, there was significantly higher proportion of β -thalassemia major group with abnormal myocardial iron loading compared to HbE β -thalassemia group.

Conclusion: In general, most clinical monitoring parameters could not identify cardiomyopathy early as there is no significant relationship with myocardial iron loading using MRI T2* except LVESVi. We recommend all patient to undergo MRI T2* to assess cardiac iron loading and identify patient at risk of cardiac abnormality and institute appropriate intensive chelating therapy.

Supervisor:
Associate Professor Dr Ariffin Nasir
Co-Supervisor:
Dr Norsarwany Mohammad

PATTERN OF ACUTE POST-STREPTOCOCCAL GLOMERULONEPHRITIS IN HUSM KELANTAN: RETROSPECTIVE STUDY OVER 5 YEARS

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Introduction: Acute post-streptococcal glomerulonephritis (APSGN) is the most common glomerulonephritis affecting children particularly those aged 2 to 12 years old. APSGN is typically a complication of streptococcal infection originating from the skin or the throat. Objectives: The objective of this study was to evaluate the sociodemographic, clinical profiles, laboratory findings and outcome of APSGN children in Hospital USM (HUSM), Kelantan and explore the factors associated with development of hypertensive encephalopathy.

Methodology: This study was conducted via retrospective record review in HUSM, Kelantan. It involved all newly diagnosed APSGN cases aged 2 years to 13 years who met all the study criteria from January 2008 till December 2012.

Results: There were 180 children included in this study with the mean age at diagnosis of 7.4 years old with equal gender distribution. A peak incidence of children with APSGN was observed within 3 months after rainy season, from February to April. The lowest cases recorded were from May to July, the driest months of the year. Family history of acute nephritis was detected in 13 (7.2%) of cases. Preceding history of skin infection was more commoner compared to throat infection. The most common presentation of children with APSGN in Kelantan was periorbital edema (99.4%), gross hematuria (93.9%), and hypertension (88.9%). Typical laboratory findings in APSGN were raised ASOT, decreased complement levels, increased blood urea and creatinine, hematuria, and proteinuria. Complications of children

with APSGN seen were severe hypertension, hypertensive encephalopathy, severe azotemia leading to acute renal failure and acute pulmonary edema. Based on multiple logistic regression model, several factors were found to be significantly associated with development of hypertensive encephalopathy. There were age group, preceding history of throat and skin infection and low serum C4.

Conclusions: APSGN in our locality had good clinical outcome with no morbidity and mortality with the provided treatment. Slight drop of prevalence were seen from 11.3% in 1988 to 10% in our 5 years review from 2008 to 2012. The predictive factors for development of hypertensive encephalopathy were age group, preceding history of throat and skin infection and low serum C4.

Supervisor:
Associate Professor Dr Nik Zainal Abidin bin Nik Ismail
Co-Supervisor:
Professor Hans Amin Rosternberghe
Dr Mohd Ikram bin Ilyas

THE EFFECTIVENESS OF CARDIOPULMONARY RESUSCITATION TRAINING ON KNOWLEDGE AND ATTITUDE TOWARDS BASIC LIFE SUPPORT AMONG SECONDARY SCHOOL TEACHERS IN KOTA BHARU, KELANTAN

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Introduction: basic life support skill is an important skill for the public to be acquired. Implementation of the skill in the school institution would provide us with great numbers of potential rescuer in the future.

Objectives: The aim of this study is to determine the effectiveness of Cardiopulmonary resuscitation training on knowledge and attitude among secondary school teachers in Kota Bharu.

Methodology: This is a prospective interventional study done from January 2013 until June 2013. The validated questionnaire was constructed base on AHA guideline 2010. The respondents were teachers from eight different schools in Kota Bharu. Using simple randomization, four schools were selected as control group and another four schools for intervention group. Teachers from intervention group will be provided with CPR training including lecture, video show, pamphlet and practical session. Meanwhile, teachers from the control group will receive booklet about hazard of smoking as the intervention material. The questionnaires were distributed at the pre-intervention phase and 2 weeks post intervention week. Similar process was implemented to the teachers in control group.

Results: A total of 195 secondary school teachers were

involved in the research. It comprised of 95 respondents for intervention group and 100 respondents for control group. Majority of the respondents were Malay account for more than 80.0%. Other than that, most of the teachers were female and age above 40 years old. More than 50.0% of the teachers have served more than 15 years with minimum academic qualification of degree. Furthermore, 57.0% of the respondents from control group and 63.3% from the intervention group did not have previous training in CPR. Respondents with previous training CPR, less than 10.0% of them learned it within a year of study date. The mean(SD) total score for knowledge for the intervention group was 92.31(15.59) and control group was 93.77(11.94) before intervention implemented. With regard to the attitude score, mean(SD) total score for invention group was 25.44(4.09) and control group was 25.09(11.94). After two weeks post intervention, there was increment of 17.4% in total knowledge score for the intervention group. However, the attitude score post intervention did not show any significant increment

Conclusions: From this research we can conclude that, baseline knowledge in term of CPR among secondary school teachers more than average since the beginning. Same goes to, attitude toward resuscitation. After completed CPR training, significant improvement was noted in term of knowledge among teacher in the intervention group. However, the attitude score did not show significant increment. Thus, further evaluation in attitude of the teachers need to be done in the hope that future improvement of dissemination CPR in the school institution

Supervisor:
Associate Profesor Dr Nik Hisamuddin Nik Abd Rahman

A STUDY ON SERUM MAGNESIUM LEVEL AMONG PATIENTS WITH HYPERTENSIVE URGENCY

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Introduction: Magnesium affects the blood pressure by modulating blood vessels tone and reactivity. Its deficiency has been implicated in the pathogenesis of hypertension. We explored the association between serum magnesium level and hypertensive urgency, which is a common complications of hypertension.

Objectives: This study was focused on evaluating the serum magnesium level and other associated factors among hypertensive urgency patients in our population.

Methods: This study was an observational, prospective cross-sectional study with data collected from hypertensive urgency patients and control population presented in Emergency Department, Hospital Universiti Sains Malaysia (HUSM) during a 7 months period from December 2012 until

June 2013. Serum magnesium levels were measured using a single machine, which was Abbott Architect C8000 used by the main Chemical Pathology Laboratory in HUSM.

Results: 82 hypertensive urgency patients and 53 subjects representing the normal population were recruited. 41.5% of patients presented with symptoms related to hypertension while 58.5% had incidental findings of hypertensive urgency. The most common symptom was giddiness, followed by headache, palpitations, epigastric pain, nausea, neck pain, epistaxis, chest discomfort and blurred vision. 79.3% of the patients were admitted to the observation ward, with mean length of stay of 4.35 ± 2.52 hours and significant mean arterial pressure reduction of 27.54 mmHg. The normal range of serum magnesium level in the normal population was between 0.92 mmol/L to 1.00 mmol/L. The mean serum magnesium level for hypertensive urgency patients was 0.90 ± 0.15 mmol/L. The mean serum magnesium level of hypertensive urgency patients was significantly lower with 0.06 mmol/L less than the normal population. There were no statistically significant differences among means of blood pressure in hypomagnesemia, normomagnesemia and hypermagnesemia groups. No factors were found significant in predicting hypomagnesemia in hypertensive urgency patients.

Conclusion: The effect of hypomagnesemia is usually underestimated since magnesium level is not commonly measured. This study showed that the serum magnesium level was lower in hypertensive urgency patients as compared to the normal population. This assists in our understanding on the effect of magnesium in hypertensive urgency patients. It is hoped that the role of magnesium in the treatment and prevention of hypertensive urgency will be explored and acknowledged.

Supervisor:
Dr Mohd Hashairi Hj Fauzi
Co-supervisor:
Associate Professor Dr Rashidi Ahmad

A COMPARISON STUDY BETWEEN REVISED TRAUMA SCORE, INJURY SEVERITY SCORE AND TRAUMA AND INJURY SEVERITY SCORE IN DETERMINING OUTCOME OF MAJOR TRAUMA IN MALAYSIA

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Introduction: Trauma is one of the leading causes of morbidity and mortality for those aged 20 to 40 years old in Malaysia. Most of the major trauma patients that result from road traffic accidents will end up either seriously injured or worse death. Therefore, improving the quality of trauma care and applying preventive measures are the major objective

of the health system in our country. One way to tackle this problem is by creating a database that collects data on major trauma occurrence and analyze them from time to time to see the effect of overall injuries. This will improve the country's health system and help us to focus more on the factors that seem to play a role in determining the effects of the injury.

Objectives: The purpose of this study is to look for various trauma scoring association in determining outcome of major trauma in Malaysia particularly the Revised Trauma Score (RTS), Injury Severity Score (ISS) and Trauma and Injury Severity Score (TRISS). Its specific objective is to determine the association of these trauma scores in regards to mortality of major trauma and the length of stay.

Methodology: This study is a retrospective study using records from the National Trauma Database (NTRD) of the year 2008. A total of 1220 data were collected during that year. Data were compiled and analyzed using the Statistics Program for Social Studies (SPSS) model version 20.0. Data on age, gender, mechanism of injury, length of hospitalization was formulated. Then, the relationship between the three trauma scores with mortality was analyzed using multiple logistic regressions. Next, trauma scores were analyzed with multiple linear regressions to determine the relationship between trauma scores with length of stay.

Results: From this study it was found that out of 1220 patients in the database, the outcome of patients was either alive or dead or missing data. Among all three, 31% ($n = 379$) of patients died in 2008 and 69% ($n = 836$) was alive upon discharge from hospital. In 5 cases the outcome was not recorded. The mean length of stay in the hospital was 5 days ($SD = 11.00$) and most of them was admitted within 2 to 7 days in the hospital 52.1% ($n = 251$). By using multiple logistic regressions we found out that there was a good association of RTS and ISS with major trauma; P value of 0.001 and 0.02 respectively as compared to TRISS P value 0.53. The area under the ROC curve was 71.5%. And we also found that there is a limited association of RTS and ISS as compared to TRISS in predicting length of stay using the multiple linear regressions analysis. The P value was 0.01, 0.03, and 0.98 respectively. However, the Coefficient of determination (R^2) = 0.008 meaning the association is weak.

Conclusion: This study revealed that the Revised Trauma Score is a better trauma score to predict the mortality of major trauma as compared to Trauma and Injury Severity Score and Injury Severity Score. The Revised Trauma Score and Injury Severity Score has a relation to determine the length of stay in major trauma as compared to Injury Severity Score and Trauma and Injury Severity Score. This study shows that the Revised Trauma Score is applicable in Malaysia as a form of trauma score in quality assessment.

Supervisor:

Dr Tuan Hairulnizam b. Kamauzaman

Co-Supervisor

Associate Professor Nik Hisamuddin Abd Rahman

Dr Sabariah Faizah bt Jamaluddin

A RETROSPECTIVE STUDY ON HYMENOPTERA STING IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Stinging insects with venom belong to the order Hymenoptera which includes bees, vespids (hornets and wasps), and ants. The stings reactions can range from mild annoying local reaction up to fatal systemic toxic and allergic responses. The reactions and complications have caused significant health concerns all over the world.

Objectives: This study was focused on understanding the patterns of hymenoptera stings, its presentations and complications as well as identifying the patients who were at risk of developing severe complications secondary to hymenoptera stings.

Methods: This study was an observational, retrospective cross-sectional study. The data was collected from medical records of patients presented to Hospital Universiti Sains Malaysia with hymenoptera sting within 5 years period, from year 2006 to 2010. Sampling frame was obtained from Medical Record Office.

Results: A total of 268 subjects were recruited in this study. Majority were males, Malays and from the paediatric age group. The sting cases can be seen throughout the year with the highest incidence during the hot and dry season and lowest during the monsoon season. Stings cases were observed more at noon and late evening. 99.3% of subjects developed local reactions while 23.9% presented with systemic reactions. The prevalence of severe complication was 18.7%. Anaphylaxis was the most common severe complication observed affecting 15.3% of total population, followed by coagulopathy (4.5%), cardiovascular complication (2.2%), renal injury (2.2%), lung injury (1.5%), sepsis (1.1%), liver injury (0.7%), neurologic complication (0.4%) and rhabdomyolysis (0.4%). Mortality rate was 1.5%. Children aged less than 10 years old ($OR = 17.5$, $P = 0.008$), presence of atopy ($OR = 4.8$, $P < 0.0005$) and greater number of stings per episode were factors identified to have significant risk of severe complications. Patients who had 2 to 10 stings ($OR = 3.8$, $P = 0.001$), those with 11 to 20 stings ($OR = 5.5$, $P = 0.013$) and patients with more than 20 stings ($OR = 11.9$, $p = 0.003$) had increased risk of severe complications as compared to those with only one sting.

Conclusion: Understanding the nature of hymenoptera stings may help in reducing its incidence. Recognising manifestations of severe reactions and identifying those who may be at risk is crucial in managing hymenoptera stings, as early and appropriate treatment may prevent progression of severe complications.

Supervisor:

Associate Professor Dr Nik Hisamuddin Nik Ab Rahman

A STUDY ON ADEQUACY OF CERVICAL SPINE RADIOGRAPH IN TRAUMA PATIENT AT EMERGENCY DEPARTMENT HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: The accurate diagnosis of the cervical spine injury is essential for the optimal management of the patient. Emergency physician face a great challenge in the diagnosis of cervical spine injury, therefore, radio imaging is frequently used as an important aid for diagnostic purposes. Plain cervical spine radiograph is routinely performed in the emergency department in most of the center as a primary radiograph for the suspected cervical injury patient. This study is performed to determine the adequacy of cervical spine radiograph among trauma patient at Emergency Department Hospital Universiti Sains Malaysia.

Objectives: To evaluate the adequacy of cervical spine radiograph and identify any factors that may affect the adequacy of cervical spine radiograph among trauma patient at Emergency Department Hospital Universiti Sains Malaysia. **Methods:** This was a cross sectional study of a six months period from September 2012 until February 2013 carried out at Emergency Department Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan. All of the patients with trauma of any mechanism who required cervical spine radiograph to be performed by using Canadian cervical spine rules were included in this study. The descriptive analysis was performed for the proportions of inadequacy of cervical spine radiograph and for the associated factors; the data was analyzed using simple logistic regression and multiple logistic regressions in SPSS version 20.0.

Result: There were a total of 170 patients enrolled into the study during the study period. Majority of them were males (78.8%), with mean age was 31.19 ± 18.67 . The most common injuries were caused by motor vehicles accidents (87.6%). From descriptive statistic, there was a high proportion of inadequacy of cervical spine radiograph which account for 55.3%. Elderly patient have increase odds of inadequacy of cervical spine radiograph by 4 times than younger patient. The patient with head injury had 3.23 odds of inadequacy with P value 0.003 and patient with clavicle fracture had 3.44 odds of inadequacy of cervical spine radiograph with P value of 0.05.

Conclusion: There are high percentages of inadequacy of cervical spine radiograph among trauma patient. The elderly patient, the patient with head injury and clavicle fracture are the significant factors associated with inadequacy of plain cervical radiograph. The primary CT scan cervical is an imaging modality of choice for cervical clearance in these groups of patients to ensures more accurate and rapid

detection of abnormalities and subsequently improves the management of the trauma patient.

Supervisor:

Dr Emil Fazliq Mohd

Co-Supervisor:

Dr Ahmad Helmy Abdul Karim

2 MINUTES ICE COMPRESSION TO REDUCE PRIMARY SCHOOL CHILDREN VENIPUNCTURE 'PAIN IN HUSM EMERGENCY DEPARTMENT

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Introduction: Intravenous cannulation causes iatrogenic pain among children who presented to emergency department (ED) for their treatment administration. Sometime it causes distress worse than the illness itself to the patient.

Objectives: The objective of this study was to determine the efficacy of ice compression as an analgesic to reduce the pain induced by intravenous cannulation in the primary school children.

Methods: A randomised parallel interventional trial was conducted on 60 primary school children that presented to ED Hospital Universiti Sains Malaysia (HUSM). Two groups of children were randomly distributed as the interventional and control group. The interventional group received 2 minutes ice compression at the site for their venipuncture on the dorsum of hand prior to the procedure while in the control group venipuncture done as usual without any analgesics. Self reporting pain scoring using visual analogue score (VAS) were recorded. The physiological response was recorded based on the vital sign such as heart rate, respiratory rate, systolic and diastolic blood pressure prior and within 2 minutes after venipuncture procedure completed. Failure of 2 attempts for venipuncture was considered a failure.

Results: Analysis of the data revealed that there was significant different in the mean of VAS pain score for the two groups in which the mean VAS pain score in the interventional group was 31.20 ± 19.16 and the control group was 49.77 ± 14.80 and P value was < 0.005 . The physiological changes in the two group revealed a mixed result in which the heart rate and respiratory rate were reduced more in the interventional group compare to the control group. However both systolic and diastolic blood pressure changes were not significantly differ between the two groups. None of the subjects in both group had a failure.

Conclusions: Ice compression is an effective intervention to reduce pain during intravenous cannulation among primary school children. It is readily available in the ED and inexpensive alternative.

Supervisor:

Dr Mohd Hashairi bin Fauzi

Co-Supervisor:

Dr Abu Yazid bin Mohd Noh

RAPE MANAGEMENT AT ONE-STOP-CRISIS-CENTRE: A SURVEY ON KNOWLEDGE, ATTITUDE AND PRACTICE AMONG THE HEALTHCARE PROVIDERS IN THE EMERGENCY DEPARTMENT, HOSPITAL UNIVERSITI SAINS MALAYSIA.

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Introduction: Rape is a serious problem and has major physical and psychosocial impact on the survivors. The effect is worst when they are not fully supported by the healthcare providers at the OSCC. Aimed to provide integrated and comprehensive multi-level crisis intervention to rape survivors, the OSCC is often located in the emergency department. Hence, it is imperative that the emergency healthcare providers possess adequate knowledge, attitude and practices that would help in the smooth running of an efficient OSCC work process.

Objectives: This study aimed to assess the level of knowledge, attitude, and practice of rape management at the OSCC among various groups of healthcare providers in the Emergency Department at HUSM, Kelantan.

Methodology: This was an observational cross-sectional self-reported study involving 110 healthcare providers at the emergency department HUSM. A total of 51 questionnaires were completed by all respondents. There were 50 (45.5%) staff nurses, 32 (29.1%) ED doctors, 10 (9.1%) medical assistants, and 18 (16.4%) health attendants involved in the study. Almost two-third of the respondents had more than two years working experience in the ED, HUSM.

Results: There was a significant difference in the mean score of knowledge on OSCC ($F = 4.82, P = 0.001$), the mean score of attitude ($F = 11.33, P = 0.001$) and the mean score of practice ($F = 5.86, P = 0.001$) among the various groups of healthcare providers in the Emergency Department, HUSM. The staff nurses showed significantly higher mean of knowledge on OSCC [9.71 (SD 1.71)] and practice [14.14 (SD 2.86)] than the rest of the groups. The emergency doctors showed significantly higher mean of attitude towards rape survivors [9.81 (SD 2.84)] than the staff nurses [7.52 (SD 2.40)]. This study also found a significant difference in the mean score of knowledge, attitude and practice in relation to the previous attendance to OSCC course. The respondents who have attended more than 2 OSCC courses had the highest mean of knowledge in OSCC [10.16 (SD 0.96)], attitude [9.05 (SD 2.50)] and practice [15.47 (SD 2.14)]. Gender, ethnicity,

service experiences in the emergency department and previous OSCC course attendance had great influence on the attitude and practice of rape management at the OSCC.

Conclusion: There were differences in the level of knowledge, attitude and practice among the various groups of healthcare providers involved with the rape management at the OSCC, HUSM. The staff nurses were more knowledgeable about the OSCC service and adhered more to the acceptable practice on the rape management at the OSCC compared to the ED doctors and the rest of the groups. The ED doctors however showed more positive attitudes towards the rape survivors presented to the OSCC. Overall, most of them have good knowledge on OSCC, held favorable attitudes towards the rape survivors and adhered to the acceptable practice at the OSCC.

Supervisor:

Dr Chew Keng Sheng

Co-Supervisor:

Dr Ida Zarina Zaini

A PILOT STUDY ON PATTERN OF FOOT INJURIES IN MOTORCYCLE TRAUMA IN RELATION TO THE TYPE OF FOOTWEAR IN THE EMERGENCY AND ORTHOPAEDIC DEPARTMENTS HOSPITAL UNIVERSITI SAINS MALAYSIA, KUBANG KERIAN, KELANTAN

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Introduction: Motorcycle accidents increases in number year by year. The number of accidents with injuries also increases. Foot injuries are common and causing the disabilities to patients and financial burden to the health sector of the country and impairs the total national productivity. Thus understanding the foot protection during riding motorcycle will provide a safety measure and reduce the impact of injuries. Objectives: To study patterns of foot injuries in relation to the type of footwear, specifically in identifying the appropriate shoe-wear during riding motorcycle, the associated factors in relation to the type of foot injuries and to identify the correlation between site of foot injuries with the dominance handedness and footedness.

Methods: This was a prospective cross sectional study of one year duration commencing from July 2012 till June 2013 involving all motorcyclists who presented to the Emergency and Orthopaedic Departments in the Hospital Universiti Sains Malaysia. The feet were examined and identified the injury types and the footwear types were identified and documented in the study form. The side of foot injury was then referred to the patient's dominance hand and foot.

Result: Out of 210 patients who enrolled in the study, 120 (57.1%) were using proper footwear and 90 (42.9%) were using non proper footwear. There was a significant relationship between proper footwear and the injury to the foot. The non proper footwear (slipper, sandal and half shoe) were all significant to cause foot injury during riding motorcycle with the $P < 0.001$. Among the proper foot wear, those wearing latex shoe were significant to cause foot injury with the $P = 0.010$ as compared to other type of shoes which the result were not significant with $P > 0.05$. There were no significant result in the dominance handedness and footedness in relation to the side of foot injury with the $P = 0.830$ for handedness and $P = 0.343$ for footedness. The leather shoe have significant protective capacities from foot injury. Age group 60 and above have 8 times the odds to have foot injury but the result was not significant with the $P = 0.052$ and female have 2 times the odds to have foot injury but the result was not significant based on multiple logistic regression analysis when the confounders were adjusted. The patterns of foot injuries identified were superficial wound, open wound, dislocation, sprain, soft tissue injury, fracture, crush injury, and nail avulsion.

Conclusion: Our study revealed that the non proper footwear causing more injury to the foot as compared to the proper footwear. The leather shoes gave a better protection to the foot as compared to other footwear. The hands dominance or foot dominance did not predict the site of foot injury.

Supervisor:
Dr Emil Fazliq bin Mohd

DISASTER MANAGEMENT OF TERRORIST ATTACK: A STUDY ON THE LEVEL OF KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) AMONG THE EMERGENCY HEALTH CARE WORKERS AT EMERGENCY DEPARTMENT IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Terrorism and disaster management are serious disruption of the functioning of a community or a society causing widespread human material, economic, or environmental losses, which exceed the ability of the affected community or society to cope using its own resources. During such events, the entire emergency healthcare workers play vital role in dealing with the victim as they are the front liner. It is therefore crucial for the emergency healthcare workers to be prepared in facing the aftermath of disaster.

Objectives: The aim of the study was to determine the level of knowledge, attitude and practice among the emergency healthcare workers toward disaster management of terrorist attack.

Methods: This is a cross sectional study using closed ended and open ended question leading to mixed method approach which taken 2 years duration to complete from January 2012 until December 2013. This study involved Emergency Health Care Workers which was conducted at Emergency Department Hospital Universiti Sains Malaysia (HUSM). Questionnaire forms eliciting information about knowledge, attitude and practice toward terrorism and disaster management were distributed to all staffs working at the aforementioned department. Statistical analysis was done using SPSS software version 20.0.

Results: This study involved total of 108 healthcare workers from Emergency Department of Hospital Universiti Sains Malaysia. Majority were Malays (97.2%) and most of them from the 26-45 year age group (72.2%). Male (45.4%) and female (54.6%) are almost equally distributed. Respondents are categorised in non -professional group (72.2%) and professional group (27.8%). Most of the respondents were staff nurses (45.4%) and most of them worked for a period of 5-20 years duration (56.5%), therefore most of the respondents were assumed quite knowledgeable about the hospital setting and well enough understand how the hospital system operating during disaster situation. Education level among the staff was categories into 2 categories which are high level of education (64.8%) and low level of education (35.2%).

In this study, 51.9% of respondents have a good knowledge regarding disaster management of terrorist attack and 48.1% had poor knowledge (Mean 28.67; SD 5.204). Support staff have 2.82 higher odds than professional staff in poor knowledge score outcome (95% CI: 1.12, 7.08; $P = 0.027$). Those with working duration less than 10 years have 2.66 higher odds than those working more than 10 years in poor knowledge score outcome (95% CI: 1.16, 6.06; $P = 0.020$). Level of attitude among emergency health care workers towards disaster management of terrorist attack was noted to be almost equal 50.9% good attitude and 49.1% had poor attitude (Mean 66.94; SD 8.091). In term of practice among the emergency healthcare workers towards disaster management of terrorist attack, 55.6% of them had good practice and only 44.4% had poor practice [Mean 18.37; SD 2.467]. From the study, there were no significant factors associated with poor attitude score outcome and poor practice score outcome.

Conclusion: High score level of knowledge influence by many factors but statistically from this study, the type of occupation which reflect the professional groups and longer duration of work contribute positive value regarding disaster management of terrorist attack. It is therefore very important for health administrator to conduct disaster-related education and encourage healthcare workers to involve in disaster response particularly in terrorism to improve their knowledge towards disaster management of terrorist attack.

Supervisor:
Professor Dr Rashidi Ahmad
Co-Supervisor:
Dr Shaik Farid Abdull Wahab

EARLY GOAL DIRECTED THERAPY. A SURVEY ON KNOWLEDGE, ATTITUDE AND PRACTICE LEVEL AMONG DOCTORS WORKING IN THE EMERGENCY DEPARTMENT.

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Introduction: Early detection of patients with suspected severe sepsis through a systematic screening method and initiating Early Goal Directed Therapy is regarded as a very important aspect in the management of this group of patients in the emergency department because many studies have shown benefits in terms of reducing morbidity and mortality rates of this group of patients. Failure to identify patients who develop symptoms of severe sepsis in a short period of time and initiating early resuscitation measures would lead to high mortality in this patient group. It requires in-depth knowledge about the disease process of severe sepsis and septic shock and skills in handling patients requiring intensive care treatment started at the emergency department level.

Objectives: To determine the knowledge, attitude and practice level on Surviving Sepsis Campaign Care Bundles and EGDT among ED doctors and to identify associated factors that contributing to satisfactory knowledge, positive attitude and having acceptable practice.

Methods: This was a cross-sectional study conducted at ED of three Ministry of Health Hospital and Hospital Universiti Sains Malaysia in State of Kelantan using a validated self-administered Surviving Sepsis Campaign Care Bundles and EGDT questionnaire comprised of demographics, 12 items for knowledge, 11 items for attitude, and 10 items for practice level. Statistical analyses using Multiple Logistic Regression were performed to identify significant associated factors.

Results: Of 112 respondents, 45 were residents of emergency medicine, 40 were medical officers and 27 were house officer. Median score of knowledge is (5/12), attitude (44/55) and practice level (30/50). 54.5% (n = 61) of ED doctors were found to have satisfactory knowledge; 55.4% (n = 62) were found to have a positive attitude, and 53.6% (n = 60) were found to have acceptable practice. The mean score were found to be poor (5.02) for knowledge, good for attitude (44.36), and moderate for practice (30.82). Duration of working experience in ED ($P = 0.000$), attendance to Advanced Cardiac Life Support (ACLS) ($P = 0.000$) and APLS/PALS course ($P = 0.000$) were found significantly associated with satisfactory knowledge. Duration of working experience in ED ($P = 0.000$), attendance to Advanced Cardiac Life Support (ACLS) ($P = 0.010$) and credentialing in core critical care procedures ($P = 0.0006$) were found significantly associated with positive attitude towards SSC care bundles and EGDT.

Conclusion: This study demonstrated that doctors working in the ED have a poor level of knowledge, a good level of attitude, and moderate level of practice towards SSC care bundles and EGDT and there is room for further improvement via training targeted towards this group of doctors.

Supervisor:

Dr Shaik Farid Abdull Wahab

SYMPTOMS PERCEPTION AND PRE-HOSPITAL CARE SEEKING BEHAVIOUR AND ITS INFLUENCE TOWARDS OUTCOME OF PATIENTS WITH ACUTE CORONARY SYNDROME IN EMERGENCY MEDICINE DEPARTMENT, HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Good coronary care begins from the patient's home including early decision to seek medical attention. As such, it is recommended that the patients activate ambulances, rather than to use their own transportations to reach the hospitals. It is not known whether our Malaysian patients prefer to use private transportations or ambulances when they develop chest pain. This study aims to explore this research question.

Objectives: 1) To explore the patients' interpretation regarding the symptoms they are experiencing –heart attack or other condition. 2) To determine the time delay between onset of symptoms to the activation of EMS or using own transportation to Emergency Department Hospital Universiti Sains Malaysia (HUSM). 3) To determine the patients' preference of mode of transportation and the reason for it.

Methods: This is a cross-sectional study using open labeled structured questionnaire on patients diagnosed with acute coronary syndrome (ACS) in the emergency department of Hospital Universiti Sains Malaysia from June 2012 to November 2012.

Results: Out of the 110 patients surveyed, 105 (95.5%) patients chose to use own transportation when they developed symptoms suggestive of ACS. Only 3 patients (2.7%) came to the emergency department within 1 hour of onset, and all these 3 patients chose to use ambulances as their modes of transportation. None of the patients who chose own transportation came within the first hour of symptoms onset. This is shown to be statistically significant ($P < 0.001$). The level of education as well as past history of ischemic heart disease did not significantly influence the patients' choice of transportation. Overall, the awareness of symptoms of acute coronary syndrome is still poor.

Conclusion: The extremely low percentage of patients

choosing ambulances shows that there is a lot more educational work to be done to educate our community on acute coronary syndrome.

Supervisor:

Dr Chew Keng Sheng

ENDOTRACHEAL INTUBATION CUT OFF POINT FOR A NEW SCORE: FULL OUTLINE OF UNRESPONSIVENESS (FOUR) SCORE IN TRAUMATIC BRAIN INJURY

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Introduction: Traumatic Brain Injury is a major cause of death and disability. Initial resuscitation for traumatic brain injury patient during pre-hospital and in emergency department plays an important role in preventing secondary brain insult. Assessment of conscious level of a patient plays an important role in predict patient's ability to protect the airway, severity of the brain injury and the prognosis of patient. Glasgow Coma Scale (GCS), was first introduced in 1970s, a best known and well accepted scale, hence it uses as a gold standard to assess mental status of post TBI patient. However, GCS has its limitation accurately assess intubated, aphasic and aphonic patients, and unable to detect locked-in syndrome. Full outline of unresponsiveness (FOUR) score, a new coma scale, consist of 4 component; eye, motor, brain stem reflex and respiratory pattern, which compensate the limitations existing with the GCS and provides the user with greater information about patient's condition.

Objectives: The aims of this study were to determine endotracheal intubation cut off point and its sensitivity and specificity for FOUR score in TBI patient. This study also aims to determine inter-rater reliability of FOUR score and GCS between the doctors in emergency department HUSM and to evaluate the discharge outcome and FOUR score in TBI patient.

Methods: This is a prospective observational study. It was conducted in Emergency Department, Hospital Universiti Sains Malaysia, Kubang Kerian. 96 patients who were fulfilled the inclusion criteria were enrolled in the study period of 13 months, since Jun 2012 to Jun 2013. Patient's mental statuses were assessed with GCS and FOUR score. Intraclass correlation coefficient test were used to evaluate the agreement of 20 pairs of Emergency Department doctors on this new scoring system. Receiver operating characteristic curve is used to determine the cut off point for intubation and GCS was used as a gold standard. Correlation was used to determined neurological outcomes on discharge using Glasgow Outcome Scale, hence, to evaluate the prognosis predictive value of FOUR score.

Result: FOUR score of 12 as the cut off point for

endotracheal intubation, with sensitivity 91.38%, specificity 97.37% and area under the curve of 0.985, 95% CI 0.97 to 1.00. Result showed complete agreement between 2 groups with Cronbach's Alpha of 1.0, intraclass correlation of single and average measures both showed 1.0. Three categories of outcome, which are good (GOS 4–5), moderate (GOS 2–3) and poor (GOS 1) were test on their mean differences. The median of FOUR score to each outcome category was determined. Study showed that the category of good outcome with median of FOUR score 13, moderate outcome with median of FOUR score 10 and poor outcome with median of FOUR score 7. There was correlation between FOUR score and GOS.

Conclusion: In this study, by using GCS, which mentioned as the gold standard, to determine the endotracheal intubation cut off point for FOUR score. FOUR score of 12, a significant cut off point with high sensitivity and specificity. Good agreement between doctors in emergency department using FOUR score for coma status assessment. There was correlation between FOUR score and GOS.

Supervisor:

Dr Abu Yazid MD Nor

COMPARISON ON THE EFFECTS AND SAFETY OF TUALANG HONEY AND TRIBESTAN IN SPERM PARAMETERS, ERECTILE FUNCTION AND HORMONAL PROFILES AMONG OLIGOSPERMIC MALES

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Introduction: Honey usage as a medicine was continued from an ancient to a modern folks. In Malaysia population, honey was used as supplements for men's health since many years although no clear scientific evidence of its benefit.

Objectives: This study aims to evaluate the effects of Tualang Honey on sperm parameters, erectile function and hormonal profiles as compared to Tribestan and the safety profiles of the both products.

Methods: A randomised control trial was done using Tualang Honey (20 gram) and Tribestan (750 mg) over a period of 12 weeks among oligospermic males. Sperm parameters including sperm concentration, sperm motility and sperm morphology were analyzed and erectile function was assessed using IIEF-5 questionnaire. Hormonal profile of Testosterone, FSH and LH were studied. Safety profile was measured by hematology profile, renal and liver functions besides adverse effect reporting. The respondents were randomised into two groups and the outcomes were analyzed using SPSS version 18.

Results: A total of 66 respondents were involved and no significant difference of socio-demography and medical characteristic in between both groups. Mean body mass index of the respondents in both groups was overweight in which 27.4 kg/m² in Tualang Honey group and 26.2 kg/m² in Tribestan group. A significant increment of mean sperm concentration ($P < 0.001$), sperm motility ($P = 0.015$) and sperm morphology ($P = 0.008$) were seen in Tualang Honey group. In Tribestan group, a significant increment of mean sperm concentration ($P = 0.007$) and morphology ($P = 0.009$) were seen. No significant difference of sperm concentration, sperm motility and sperm morphology were seen in between Tualang Honey and Tribestan group and similar results were also seen in erectile function and hormonal profile. All safety profiles were normal and no adverse effect was reported.

Conclusion: Tualang Honey effect among oligospermic males was comparable with Tribestan in improving sperm concentration, motility and morphology. The usage of Tualang Honey and Tribestan were also safe with no reported adverse effect.

Supervisor:

Professor Dr Shaiful Bahari Ismail

Co-Supervisor:

Associate Professor Dr Nik Hazlina Nik Hussain

Professor Dr Siti Amrah Sulaiman

Professor Dr Hasnan Jaafar

Dr Norhayati Mohd Noor

Associate Professor Dr Roszaman Ramli

Associate Professor Dr Samsul Deraman

KNOWLEDGE AND ATTITUDE ON MENSTRUAL DISORDERS AMONG PARTICIPANTS ATTENDING PREMARITAL COURSE IN KOTA BHARU, KELANTAN

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Introduction: In Malaysia, the prevalence of menstrual disorders among adolescent and young adults is high. However, most of them are not aware of the signs and symptoms of menstrual disorders in terms of medical issue as well as Islamic ruling. Awareness of the menstrual disorders symptoms is important so that early and appropriate treatment can be given. This study was conducted to evaluate the knowledge and attitude of pre-marital course participants on menstrual disorders for both men and women.

Objectives: The objectives of the study were to determine the prevalence of menstrual disorders among premarital women, to compare the knowledge and attitude on menstrual disorders among premarital men and women. This study was also done to determine the associated factors for good knowledge on menstrual disorders.

Methods: It was a comparative cross sectional study

conducted from January to June 2012 at Balai Islam Lundang, Kota Bharu, Kelantan. Self-administered questionnaires were given for data collection. The questionnaires that were used in this study consist of 3 parts that required information on the womens' and mens' socio-demographic data, womens' menstrual history and information on knowledge and attitude of men and women on menstrual disorders.

Results: A total of 460 respondents were involved in this study with a response rate of 93.5%. The 430 respondents who return the completed questionnaires consisted of 202 men and 228 women. Prevalence of menstrual disorders among premarital women was 78.9%, with the highest prevalence on dysmenorrhea 53.3%, polymenorrhea 7.5 %, and oligomenorrhea 4.4 %. From this study, prevalence of good knowledge was higher among women compared to men participants with 73.2% and 26.8% respectively. There was a significant difference on knowledge on menstrual disorders between pre-marital men and women with Chi Square of 7.386 at degree of freedom of 1, P value of 0.007. There was also a significant difference on attitude on menstrual disorders between premarital men and women with Chi Square of 8.051 at degree of freedom of 1, P value of 0.005. The factors associated with good knowledge on menstrual disorders using multiple logistic regression were women gender and good attitude. Furthermore, the factors associated with good attitude on menstrual disorders were women gender and good knowledge.

Conclusion: From this study, it was concluded that, menstrual disorder prevalence was high among premarital women. Both premarital men and women had low knowledge on menstrual disorder with men knowing less than the women. Based on this study, good knowledge on menstrual disorders was associated with women gender and good attitude. Whereas, good attitude on menstrual disorders was associated with women gender and good knowledge.

Supervisor:

Dr Rosediani Muhamad

Co-Supervisor:

Dr Imran Ahmad

Professor Dr Shaiful Bahari Ismail

Dr Nani Draman

Associated Professor Dr Azwany Yaacob :

Ustaz Shamsul Kamal Abdullah

THE EFFECTIVENESS OF HEALTH EDUCATION PROGRAM ON CARDIOVASCULAR RISK FACTORS AND QUALITY OF LIFE AMONG PERIMENOPAUSAL WOMEN

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MMed (Family Medicine)

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Introduction: Perimenopausal transition is a very

important stage in women's life where there is drastic change in physical, social and psychological aspects. This process also increases the cardiovascular risk and reduces quality of life of the women.

Objectives: To evaluate the effectiveness of health education program on cardiovascular risk factors and quality of life among perimenopausal women.

Methods: This is randomised control trial based on two arm parallel study. A total of 64 perimenopausal women age 45–55 years old were randomised to either intervention or control group. The intervention group was subjected to Women Wellness Workshop where they were given lectures on menopause and cardiovascular disease, an exercise session, a book on menopause, a disc and pamphlet on physical activity. Then two sessions of individual counselling for physical activity and exercise sessions were conducted followed by monthly phone calls for support. The control group received routine advice on healthy lifestyle. The outcome measured were waist circumference, body mass index, systolic and diastolic blood pressure, fasting lipid profile (Total Cholesterol, High-density Lipoprotein, Low-density Lipoprotein and triglyceride), fasting blood sugar, Total Daily Energy Expenditure (TDEE) based on 7-Day Physical Recall Activity Questionnaire and quality of life (QOL) based on Women Health Questionnaire scores over the 6 months period.

Results: There is significant reduction in systolic ($P < 0.05$) and diastolic blood pressure ($P < 0.05$) with increment of TDEE ($P < 0.05$) in the intervention group. For the QOL, significant improvement of somatic domain was observed in the intervention group.

Conclusion: Health education program with individual counseling has clinical value in reducing cardiovascular risk and improving quality of life in perimenopausal women.

Supervisor:

Dr Azidah Abdul Kadir

Co-Supervisor:

Dr Nik Hazlina Nik Hussain

Puan Intan Idiana Hassan

THE EFFECT OF LISTENING TO AL-QURAN RECITATION ON BLOOD PRESSURE AND MOOD STATE AMONG UNCONTROLLED HYPERTENSIVE MUSLIM PATIENTS ATTENDING PRIMARY CARE CLINIC, HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Etiology and pathogenesis of essential hypertension is multifactorial and of the proposed mechanism is through psychological distress. Alternative therapies such as mind body therapies (MBTs) are increasingly popular as adjunctive therapy for hypertension. Nevertheless religious approach can be incorporated in MBTs therapy.

Objectives: To determine the effect of listening to Al-Quran recitation on blood pressure (BP), heart rate (HR), and mood state among uncontrolled hypertensive Muslim patients attending Primary Care Clinic Hospital Universiti Sains Malaysia (HUSM).

Methods: This was a randomised controlled trial of 202 patient randomly allocated to either listening to Al-Quran recitation group or control group. At baseline and thirty minute after the intervention BP, HR and mood changes using profile of mood state-brief were assessed.

Results: Changes in systolic BP (SBP) and diastolic BP (DBP) were -5.9 and -3.8 mmHg respectively and changes in the HR were -4.06 bpm for the intervention group. For the control group the changes were -1.68 and -1.84mmHg respectively and HR changes was -1.39bpm. Comparing the changes of both group at the end of the trial using ANCOVA analysis, the changes difference was found to be significant. The intervention group also demonstrated significant improvement in mood state compared to control group using the POMS score.

Conclusion: This RCT demonstrated that the listening to Al-Quran recitation for 30 minute in a single session resulted in a statistically significant decrease in BP and improvement of mood state. However this finding requires further study to confirm the long term effect, especially health outcomes.

Supervisor:

Dr Norwati Daud

Co-Supervisor

Dr Juwita Shaaban

Dr Hj Mujahid Bakar

THE POTENTIAL THERAPEUTIC EFFECTS OF CHANNA STRIATUS EXTRACT IN PRIMARY KNEE OSTEOARTHRITIS

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Background: Degenerative changes are the predominant factor contributing to the disability in osteoarthritis. From study in Malaysia, it is estimated the prevalence of symptomatic knee osteoarthritis is 30 percent among the population aged more than 65 years old. Channa striatus (CS) is a fresh water fish and well known for wound healing and its antinociceptive properties that make it suitable for reduction of postoperative pain. Apart from that, it also shown to have anti-inflammatory, antimicrobial, and anti-cancer property

Objective: The objective of our study is to evaluate the effectiveness of Channa striatus extract on symptoms and physical function of primary knee osteoarthritis patient.

Methods: A randomised controlled trial with double blind study for Channa striatus versus placebo among patient with knee osteoarthritis was carried out to see the its efficacy in improving pain, symptoms and physical function. Ninety knee osteoarthritic patients were recruited for this study. Knee injury and Osteoarthritis Outcome Score (KOOS) was used to measure pain, symptoms, sports and recreational, activity of daily living and health related quality of live scores among these patients. Analgesic consumption was calculated throughout the intervention period to see the difference between treatment and placebo groups. Repeated measures ANCOVA test was used to compare the score differences between intervention and control groups after the intervention.

Results: A total of ninety patients enrolled into the

study however only 88 patients completed the study (98.3%). The mean age of the patients is 52.2 (7.08). There were significant improvements of pain ($P < 0.001$), symptoms ($P < 0.001$), and quality of life score ($P < 0.001$) in CS group compared to placebo group. The mean score of analgesia usage from week 4 to week 12 was reduced in CS group however it was not statistically significant difference.

Conclusion: In conclusion, the oral administration of CS extract showed statistically significant reduction in pain, symptoms score and improvements in quality of life in patients with primary knee osteoarthritis. The mean number of analgesia usage in CS group was reduced over the time.

Supervisor:

Associate Prof Dr Azidah Abdul Kadir

Co-Supervisor:

Dr Norhayati Mohd Noor

Dr Norwati Daud

PULMONARY HYPERTENSION IN END STAGE RENAL DISEASE SUBJECTS ON CHRONIC HEMODIALYSIS IN KOTA BHARU, KELANTAN: A COMPARATIVE STUDY ON ECHO-CLINICAL PROFILE

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Introduction: Pulmonary hypertension is one of unrecognised threat of cardiovascular mortality in patient undergoing hemodialysis. The purpose of this study is to estimate the prevalence of this condition in hemodialysis population and to determine significant risk factor that may predict the occurrence of pulmonary hypertension.

Objective: Objectives of this study are to estimate the prevalence of this condition in hemodialysis population and to determine significant risk factors that may predict pulmonary hypertension.

Methods: This is a cross sectional study in end stage renal disease patients on regular hemodialysis. Patient with achieved dry weights were subjected to Doppler Echocardiography half an hour after completed dialysis treatment. Blood investigations were also taken. Patients were classified into 2 groups-normal versus pulmonary hypertension group. Comparison made between both groups. Significant risk factors were also reviewed and equation to predict risk of developing pulmonary hypertension was formulated.

Results: A total of 62 patients underwent echocardiography examination. Prevalence of pulmonary hypertension in hemodialysis patient was 53.2%. The pulmonary hypertensive group had longer dialysis experience (36 months versus 17 months, $P = 0.034$), higher incidence of diabetes mellitus (42% versus 27%, $P = 0.065$) and lower haemoglobin level (10.1gm/dL versus 10.9gm/dL, $p = 0.113$). Pulmonary hypertension was independently associated with premorbid diabetes mellitus (OR 3.74, 95% CI 1.126, 14.015), duration of dialysis (OR 1.019, 95% CI 1.004, 1.037) and haemoglobin level (OR 0.677, 95% CI 0.438, 0.993). Pulmonary hypertension also significantly associated with left ventricular internal diameter in systolic but not statistically significant with diastolic and ejection fraction

Conclusion: We had determined that pulmonary hypertension was very prevalent in hemodialysis population. We discovered the association between pulmonary hypertension and positive history of diabetes prior to PH diagnosis, haemoglobin level and duration of dialysis. Pulmonary hypertension was also significantly-associated with LVIDs. It is recommended in the future, a prospective, larger sample size and comparison with right heart catheter study as the gold standard of diagnosis been carried out to validate the study findings.

Supervisor:

Associate Professor Dato' Dr Zurkurnai Yusof

Co-Supervisor:

Dr Azreen Syazril Adnan

A STUDY OF MASKED HYPERTENSION IN HYPERTENSIVE PATIENTS WITH ISCHAEMIC HEART DISEASE

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Introduction: Masked hypertension (MHTN) is defined as individuals with elevated ambulatory blood pressure (BP) but normal casual BP (BP in clinic setting). This can be detected using ambulatory blood pressure set, which will provide continuous blood pressure measurement for 24 hours. Studies have shown a high prevalence of target organ damage in MHTN groups.

Objectives: The purpose of this study is to determine the proportion of masked hypertension in hypertensive patients with ischaemic heart disease. The effect of this condition on the heart (thickening of the left ventricle of the heart) and kidneys (presence of protein in urine) will be evaluated. Patients's antihypertensive medication will be recorded.

Methods: From April to June 2013, 105 hypertensive patients with ischemic heart disease attending the Cardiology Clinic, Hospital University Sains Malaysia were enrolled into this study. Patients who met the inclusion criteria and gave written consent will be included in this study. Patient's demographics will be recorded. Patients's comorbidities and antihypertensive medications will be recorded. Blood pressure and heart rate will be taken. Tests which include electrocardiogram (ECG) and urine albumin will be carried out. 24 hour blood pressure set will be attached to the patient. Patient will have to come to the clinic the next day. The blood pressure monitoring will be taken off and mean blood pressure reading throughout that 24 hours will be obtained.

Results: Average age for subjects in this study is 62.3 (SD 11.05). Most of the study participants are male and Malays. More than half of them do not have other comorbidities (hyperlipidemia, diabetes mellitus and stroke). Almost one fifth of them have left ventricular hypertrophy, and high percentage have albuminuria (47.6%). Prevalence of masked hypertension is 53.3 (95% CI: 43.8, 62.8). Overall, 56 subjects are classified in masked hypertension group and the remaining subjects ($n = 49$) have normal 24 hour blood pressure. This gives ratio of about 1:1 between these two groups. Subjects in both groups showed almost similar mean

age, clinic systolic blood pressure (SBP) and diastolic blood pressure (DBP), and heart rate. For masked hypertension group, mean 24 hour SBP is slightly higher than normal level (mean 135.5, SD 13.8) and normal DBP. Meanwhile mean peak SBP and DBP were very high for this group. Apart from that, the masked hypertension group also showed higher number of diabetic patients compared to normotensive group (65.2% vs 32.7%). Beta blockers were the most used antihypertensive (57.1%) and alpha blockers were the least used (1.9%).

Conclusion: This study showed prevalence of masked hypertension is 53.3 (95% CI: 43.8, 62.8). Meanwhile left ventricular hypertrophy and albuminuria are 18.1% (95% CI: 10.7, 25.5) and 47.6 (95% CI: 38.0, 57.2). Four predictors were found to have association with masked hypertension which are peak SBP, peak DBP, diabetic status and visit SBP. Beta blockers were the most used antihypertensive (57.1%) and alpha blockers were the least used (1.9%).

Supervisor:

Prof Madya Dato' Dr Zurkurnai Yusof

Co-Supervisor:

Dr Ng Seng Loong

URINARY MONOCYTE CHEMOATTRACTANT PROTEIN-1 (MCP-1) LEVEL AMONG LUPUS NEPHRITIS PATIENT AND ITS CORRELATION WITH DISEASE ACTIVITY MARKERS IN HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN

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Background: Lupus nephritis is a well-known type of SLE that causes morbidity and mortality. Various clinical, biochemical and laboratory markers are used in assessing and monitoring disease activity. One of the commonly used tools is SLEDAI scoring system. Urinary MCP-1 was chosen as a test of interest as many studies have shown that it has good correlation with disease activity in lupus nephritis. The objectives of this current study were to assess the level of urinary MCP-1 level in lupus nephritis patients and its correlation to disease activity and thus further evaluate its usage as one of the markers to be used in clinical setting with comparison to SLEDAI and other markers available. This study also aimed to measure the standard cut off level of urinary MCP-1 level for its future usage in clinical setting.

Methods: This is a cross-sectional study that involved 30 lupus nephritis patients recruited from Nephrology clinic/CKD resource centre of Hospital Universiti Sains Malaysia, Malaysia. The study population was divided into active and inactive lupus nephritis according to SLEDAI scoring system. Urine samples were collected from each subject to test for urinary MCP-1 level and 24-hr urine protein level. Blood samples were also taken to assess the level of laboratory markers such as C3, C4 complement level, serum albumin, serum creatinine, ESR, CRP, and eGFR level. Data collected were analyzed using SPSS version 20 and STATA software.

Results: The mean age of the study population were 28.17 years old with 93.3 % of them comprised of female patients and majority of them (96.7%) was Malay in ethnicity. Out of the 30 patients in total, 16 were in active disease at the

time of recruitment. From the analysis, urinary MCP-1 level was noted to be in correlation with disease activity. Mean level in active disease was 389.43 (\pm 377.72) pg/mL and in inactive disease was 112.45 (\pm 142.42) pg/mL with the mean difference of 276.98 pg/mL (P = 0.013). There were statistically significant positive correlation between urine MCP-1 level and ESR, 24-hr urine protein and renal SLEDAI (P < 0.001). Statistically significant negative correlation were detected with C3 complement and serum albumin level (P < 0.001) and with C4 level with P = 0.006. No correlations were detected with eGFR. Based on the ROC curve analysis, the cut-off level measured was 84.43 pg/ml with the sensitivity of 81.25% and specificity of 64.29%, LR+ 2.2750 and LR- 0.2917.

Conclusion: Urinary MCP-1 level has good correlation with disease activity of lupus nephritis although it was used in clinical setting. It showed positive correlation with disease activity markers and SLEDAI scoring system that was used as a validated monitoring tool for disease activity. The result in this study was consistent with other studies in demonstrating correlation with disease activity in lupus nephritis. Further studies needed to be conducted to ascertain the cut-off level of urine MCP-1 for its usage to be further expanded into the clinical setting.

Supervisor:

Dr Azreen Syazril Adnan

A PROSPECTIVE MULTI-CENTER SINGLE BLINDED RANDOMISED CONTROLLED TRIAL TO EVALUATE THE EFFICACY OF CHITOSAN FILM VERSUS DUODERM® EXTRA THIN ON SUPERFICIAL WOUNDS

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MMed (Plastic Surgery)

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Introduction: Chitosan is the N-deacetylated derivative of chitin, which is the structural element of exoskeleton of crustaceans and cell walls of fungi. It has many useful biological properties such as hemostasis, analgesic, wound healing property, reducing scar, bacteriostatic, biocompatibility and biodegradability. So, it is very good prospect to be a kind of wound dressing material.

Objectives: The aims of this study were to evaluate efficacy of locally produced Chitosan – film in comparison to DuoDerm for superficial wound and to determine that chitosan is at least as good as the commercially available dressing material.

Methods: Two hundred and forty four patients (244) were included in the multicentre randomized controlled trial with 70.8% completed the study. Eighty-six (86) was treated with Chitosan Film and eighty-four (84) were treated with DuoDERM Extra Thin. Whereas, 74 patients (35 Chitosan film and 39 DuoDerm Extra Thin) were treated with was discontinued for various reasons.

Results: The primary outcome of this study was the percentage of epithelialization, which was measured by repeated measured ANOVA. There are no significant differences between gender, age, antibiotic usage or initial wound size (P > 0.05) except for race (P = 0.04). There was no significant difference in the mean epithelialization percentage between groups

($P = 0.29$). Patient using chitosan film experienced more pain during removal of the dressing than those with duo DERM extrathin group ($P = 0.007$). The Chitosan film group showed less exudate ($P = 0.036$) and less odor ($p = 0.024$) compare to control group. Furthermore, there were no significant difference between groups in adherence, ease of removal, wound drainage, erythema, itchiness, pain and tenderness. No edema and localized warmth were observed during the study.

Conclusion: These findings confirmed that chitosan film is equivalent and can be used in the management of superficial and abrasion wounds

Supervisor:

Profesor Ahmad Sukari Halim

Co-Supervisor:

Dr Arman Zaharil Mat Saad

Dr Farrah Hani Imran

A STUDY ON ANTHROPOMETRIC BREAST MEASUREMENTS IN THE MALAY POPULATION IN MALAYSIAN WOMEN

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Introduction: Breasts have many anatomic variations with respect to volume, width, length, projection, density, composition, shape, and placement on the chest wall. Anthropometric measurements, which involve measuring distances between a set of anatomical landmarks and a geometric volume formula is known to be the ideal and one of the most accurate method of determining breast volume.

Objectives: Our main objective in this study was to evaluate and measure breast anthropometric measurements in the Malay female population and obtain a baseline of normal parameters of the breast and nipple-areolar complex among them. We also aimed to compare the difference in breast volume between the right and left breast of individuals within the study population, to study the relationship between the breast volume and the height and weight of individuals and to evaluate the variation in breast volume in regards to Body Mass Index.

Methods: The study included 100 healthy 17-30 year old single nulliparous Malay females in Malaysia with "aesthetically perfect" breasts with a BMI between 17 – 24.9 kg/m². A total of 22 parameters were measured in standing position. The parameters measured were body weight, height, shoulder width, upper chest width and circumference, middle chest width and circumference, lower chest width and circumference, waist width, clavicle-nipple length, sternal notch-nipple length, nipple-nipple length, upper arm length, acromium to midhumeral point of nipple, medial mammary radius, lateral mammary radius, nipple-inframammary fold length, nipple diameter, areola diameter, nipple projection, and mammary projection. Breast volumes were also evaluated

Results: Normal parameters were successfully obtained. The mean breast volume of right and left breast was determined to be 536.59 ± 339.21 cc and 553.38 ± 368.12 cc. There was no significant correlation between height and breast volume but a positive correlation between breast volume

and weight. With the positive correlation between BMI and breast volume using a linear model and linear regression a formula is derived to calculate the expected breast volume of an individual solely on the BMI. The mean distance from the supra-sternal notch to the nipple on the right side and left side is 18.76 ± 2.44 cm and 18.85 ± 2.34 cm, and the mean difference between the nipples is 18.22 ± 2.25 cm, forming an equilateral triangle. The standard mammary projection is 4cm ± 1.3cm.

Conclusion: This study will help in planning both aesthetic and reconstructive breast surgery and make it possible to compare the anthropometric breast values of young Malay Malaysian women with those of women in other countries.

Supervisor:

Dr Wan Azman Wan Sulaiman

Co-Supervisor:

Dr Normala Bte. Hj. Basiron

DEMENTIA AND ITS PREDICTORS AMONG THE MELANAU IN MUKAH SUB-DISTRICT OF SARAWAK

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MMed (Psychiatry)

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Introduction: Dementia involves chronic decline in a person's intellectual function and social abilities, with potential for psychological and behavioural problems, and increases the individual's dependency on caregivers. The illness adds socioeconomic burden, psychological distress and pose stigma to the carers and the community. Statistics had shown an alarming increase of cases of dementia over the years across all population, including Malaysia.

Objectives: The aim of this study was to determine the prevalence of dementia, associated socio-demographic and clinical factors, and its association with depression among elderly Melanau in Mukah sub-district, Sarawak.

Methods: A cross-sectional study was conducted on 344 Melanau aged 60 years and above in Mukah sub-district, Sarawak. All subjects were interviewed for socio-demographic and clinical data. Elderly Cognitive Assessment Questionnaire (ECAQ) was used to screen for cognitive impairment. Ninety four subjects undergone further assessment to confirm dementia. A structured interview using Mini Mental State Examination (MMSE), Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE) and Geriatric Depression Scale (GDS) aid in the diagnosis-making.

Results: The prevalence of dementia among elderly Melanau in Mukah sub-district was 10.5%. Multiple logistic regression analysis confirmed age (OR = 1.19, 95% CI 1.12, 1.27), level of education (OR = 7.56, 95% CI 1.70, 33.57) and comorbid of ≥ 3 cardiovascular illnesses (OR = 3.76, 95% CI 1.25, 11.28) were significantly associated with increased risk of dementia. Univariate analysis (but not on multivariate analysis) also found being separated, divorced or widowed was significantly associated with increased risk of dementia (crude OR = 4.96, 95% CI 2.34, 10.50, $P < 0.001$). Dementia was not significantly associated with gender, employment status, positive family history, and smoking. Depressive symptoms

were identified but was not significantly associated with dementia ($P = 0.652$).

Conclusion: Advancing age, lower level of education and comorbid of ≥ 3 cardiovascular illnesses are predictor for risk of dementia among elderly Melanau in Mukah sub-district, Sarawak.

Supervisor:

Dr Zahiruddin Othman

Co-supervisor:

Dr Ismail Drahan

STIGMA AND RELIGIOSITY AMONG HIV/AIDS PATIENT IN HOSPITAL RAJA PEREMPUAN ZAINAB II KOTA BHARU KELANTAN

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MMed (Psychiatry)

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Background: Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome (HIV/AIDS) have become endemic across the world. Extensive research and resources are being invested in finding a treatment for this highly stigmatised disease. However stigma attached to it continue to be a barrier to effective treatment, prevention as well as for provision of holistic care among people living with HIV and AIDS (PLHA). Among Malaysians with various ethnics, Malay ethnics are the highest percentages (71%) are infected with HIV. Malays are particularly sensitive to stigma, owing to their religious beliefs, especially in regards to having sinned and partaken in promiscuous behaviour, which could have led to transmission of HIV. This could lead to double stigma among them. Various studies have examined the relationship between stigma and religiosity, but very few have been done in the context of Islamic perspective.

Objective: The aim of this study was to determine the socio- demographic, clinical characteristic and Islamic religious factors influencing level of HIV stigma and the relationship with the prevalence of emotional distress in Muslim HIV/AIDS patient and determine the correlation between them.

Methods: This is a cross sectional observational study, conducted from July 2012 to February 2013, among randomly selected of hundred HIV/AIDS outpatient, who presented to the Infectious Disease Clinic at Hospital Raja Perempuan Zainab II (HRPZ II), by administering three self-rated scales, comprised of Bergers HIV Stigma Scale, Hatta Religiosity Scale (HIRS 96) and Depression, Anxiety Stress Scale (DASS).

Results: Among the study population, 73% ($n = 73$) was found to have high level of religious knowledge. However only 30% had good religious practice. The mean HIV stigma level was found to be 122.67 (SD 16.8; CI 119.34–126.00) which was considered high. The only significant predictor for stigma is disclosure attitude. A significant correlation between Islamic knowledge ($r: 0.25$; $P = 0.013$) and emotional distress ($r: 0.33$; $P = 0.019$) to disclosure stigma, however no correlation was found between religious practised to stigma. Religiosity practice had a reverse correlation to emotional distress, which can prove to be a protective factor for emotional distress.

Conclusions: Majority of PLHA in Kota Bharu have high HIV stigma. They were also found to have high religious

knowledge and interestingly it was not reflected in their religious practice. Thus, their religious knowledge did not act as a preventive measure to stop them from being involved in prohibited behaviour contributing to HIV/AIDS transmission. Religious knowledge alone without practice is not a preventive factor in the spread of HIV infection and prevalence of emotional distress. This study stresses the importance of providing appropriate religious knowledge and implementing proper practice as a means of reducing stigma and combating emotional distress.

Supervisor:

Dr Zahiruddin Othman

Co-Supervisor:

Dr Mahiran Mustaffa

DIAGNOSTIC VALUE OF SAGITTAL OBLIQUE MAGNETIC RESONANCE IMAGING KNEE IN ANTERIOR CRUCIATE LIGAMENT TEAR

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MMed (Radiology)

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Introduction: Complete and partial ACL tear need to be differentiated by MRI prior to surgical intervention. There is limitation of orthogonal MRI to diagnose partial ACL tear due to oblique course of ACL. Therefore, we evaluate the diagnostic value of sagittal oblique MRI knee.

Objectives: The aims of this study were to determine the interobserver agreement in interpreting sagittal oblique PDW FSE, T2W FSE, and PDW plus T2W FSE MRI knee in diagnosis of ACL tear; to determine the correlation of MRI findings with arthroscopy and to compare the sensitivity, specificity, accuracy, positive and negative predictive value, positive and negative likelihood ratio of MRI findings in diagnosis of partial and complete ACL tear.

Methods: 30 patients who were suspected to have knee ligaments injury had MRI sagittal oblique PDW and T2W performed, followed by arthroscopy. 2 radiologists were blinded regarding arthroscopic findings. The images are interpreted in 3 sessions: PDW, T2W, PDW+T2W.

Results: Interobserver Kappa values in between 2 radiologists were more than 0.8 in all interpretation. Correlation coefficient in between PDW, T2W and PDW plus T2W with arthroscopy was more than 0.8. The best sensitivity, specificity, accuracy, positive predictive value, negative predictive value, positive likelihood ratio, negative likelihood ratio to for PDW to diagnose complete tear were 87.5%, 92.9%, 90.0 %, 93.3%, 86.7%, 12.3, 0.13; for T2W to diagnose complete tear were 81.3%, 92.9%, 86.7 %, 92.9%, 81.3%, 11.4, 0.2; for PDW+T2W to diagnose complete tear were 87.5 %, 92.9%, 90.0%, 93.3%, 86.7%, 12.3, 0.13; for PDW to diagnose partial tear were 75.0%, 88.5%, 86.7 %, 50.0%, 95.8%, 6.5, 0.3; for T2W to diagnose partial tear were 75.0%, 88.5%, 83.3 %, 42.9%, 95.7%, 4.9, 0.3; for PDW+T2W to diagnose partial tear were 75.0 %, 88.5%, 86.7%, 50.0%, 95.8%, 6.5, 0.3.

Conclusion: In diagnosis of partial ACL tear, sagittal oblique images were better than sagittal images and PDW was better than T2W images. There was no added value by performing both PDW and T2W sagittal oblique MRI knee.

Supervisor:
Assoc. Prof Dr. Mohd Ezane Aziz
Co-Supervisor:
Dato' Dr Hjh Salwah Bt. Hashim

ULTRASONOGRAPHIC ASSESSMENT OF THE LIVER ABSCESS CHARACTERISTICS WITH THE YIELD OF PERCUTANEOUS ASPIRATION

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MMed (Radiology)

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Introduction: Liver abscess is commonly encountered in the tropical countries. The knowledge of the ultrasound appearance of 'matured' or liquefied liver abscess and findings from percutaneous drainage would give an important insight and increased accuracy in the diagnosis of liver abscess leading to appropriate timing of intervention and improve the patient outcome.

Objectives: The study aim to assess the liver abscess characteristics based on sonographic appearance and the yield of the aspiration.

Methods: A cross sectional study of retrospective data on 99 liver abscess in 77 patients, for liver abscess patient who underwent percutaneous aspiration under ultrasound guidance were reviewed. Variables included were duration of symptom to drainage, size of liver abscess and ultrasound parameters (based on echogenicity, posterior enhancement and margin) with the outcome of yield of aspiration.

Results: There was significant correlation between the size and the yield aspiration. There was significant difference of amount of abscess between the well-defined margin and ill-defined margin group. There was significant association between matured liver abscess with amount of aspirate. There was significant difference of median for mature abscess, with higher median volume aspirated (p value = 0.007). Matured liver abscess has more yield compared to immature liver abscess. Size and maturity were the significant determinant of yield of aspiration [Pearson Correlation (r), 0.353; (R^2 = 0.189)]. Duration of symptoms pre-drainage and other individual ultrasound parameters were not significant determinant of yield of aspiration.

Conclusion: The liver abscess size, well-defined abscess margin and maturity were the important determinant of the aspiration yield. This study proved that ultrasound is an effective and reliable method for pre intervention assessment of liver abscess characteristics and including detection, diagnosis, guidance of localisation and also monitoring of response.

Supervisor:
Associate Professor Dr Mohd Ezane Abdul Aziz
Co-supervisor:
Dr Tan Suzet

PERFORMANCE, INTEROBSERVER AND INTRAOBSERVER VARIABILITY OF RADIOLOGISTS VERSUS RESIDENTS USING SOFT COPY READING MAMMOGRAPHY

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MMed (Radiology)

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Introduction: Screening mammography is a well validated tool to detect breast cancer globally, and has been proven to reduce mortality rate associated with breast cancer, typically by detecting breast cancer during its very early stage. Conventional screen-film mammography (SFM) is proven to have a high sensitivity and specificity for the detection of breast cancer. The specificity ranged from 90% to 98% and the sensitivities ranged from 83% to 95%. However, it is less sensitive for women under age 50 years, women with radiographically dense breasts and premenopausal or perimenopausal women. A major limitation of SFM is the film itself. Once a mammogram image is obtained on a film, it cannot be significantly altered. The loss of contrast due to exposure factors, especially due to dense glandular tissues cannot be regained through film display. For improving the sensitivity and specificity of screening mammography in picking up clinically silent breast cancer, some technologies have been utilised. The most recent advancement would be digital mammography, either using Computed-radiography (CR) mammography, or the new Full-field Digital Mammography (FFDM). Mode of reading mammography has evolved through several phases, starting from single read mammography, to double read mammography. The double read technique has been shown to pick up at least 10% more cancer comparing to single read. Interobserver variability may affect performance in picking up breast cancer. In an effort to reduce interobserver variability, few suggestions on reading techniques have been studied by reading soft copy mammograms acquired using digital mammograms.

Objectives: To assess performance, interobserver and intraobserver variability of our radiologists and fourth year radiology residents, in using our workstation to read soft copy mammograms. We evaluated performance and interobserver variability of our radiologists and 4th year radiology residents, to assess whether interobserver variability could be reduced substantially with the use of workstation. We also evaluate the reproducibility of the assessment using the workstation. From there, we would assess whether Dedicated Mammography Workstation could help in reducing interobserver and intraobserver variability, and to improve our sensitivity in breast cancer detection.

Methods: This retrospective study was carried out in Hospital Universiti Sains Malaysia, Kubang Kerian, and Kelantan for two years from January 2010 till December 2011. A total of 104 samples were obtained by random sampling, which included BIRADS 2 and above. Mammograms were interpreted by four observers for the presence of any breast mass and calcification. Three weeks interval between review of total 104 mammogram images and another session of re-reading 24 selected randomly mammograms from total 104 mammograms. A 5-scale BIRADS category (BIRADS 1-5) was used to categorise the findings. Agreements were analysed using Kappa analysis.

Result: The interobserver variability using Kappa agreement for detection of breast cancer was in range of moderate among the radiologists, between the radiologists and residents and fair among the residents. The variability was greater for characterisation of breast masses or calcifications. The intraobserver variability was not significant for the readers in detection of breast cancer except for resident 1, who

had fair agreement. The greater Intraobserver variability in description of breast mass and calcification was observed.

Conclusion: We concluded that there was greater sensitivity and specificity in breast cancer detection of the specialist radiologist with less degree for the general radiologist and radiology residents. There was interobserver variability, while there was no intraobserver variability for detection of breast cancer among the observers.

Supervisor:

Dr Nik Munirah Nik Mahdi

PATELLA MEASUREMENT AS A SEX DETERMINANT IN KELANTAN POPULATION ATTENDING HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

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MMed Radiology

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Introduction: Identification of sex from skeletal remains is most essential aspect of Forensic Medicine. A skeletal remains usually long bone is used in sex determination, looking at either bone morphology or measurement. There are few bones in the body that demonstrate sexual differences or dimorphism such as pelvis, cranium, bones of upper and lower limbs and etc. However the problems in sex determination from skeletal remains are to obtain complete skeleton and the variables or parameters measured are population specific. Up to date there is no published study to determine the sex of Kelantan population using measurement of patella dimensions in Malaysia. Therefore the aim of this study is to determine the sex of Kelantan population using univariate analysis on measurement of patella dimensions.

Objectives: To determine the sex of Kelantan population using measurement of patella dimensions.

Methods: This was a cross sectional study conducted from May 2013 until November 2013 at Department of Radiology, Hospital Universiti Sains Malaysia (HUSM) Kubang Kerian Kelantan. Ethical clearance was obtained on April 2013. A total of 140 living unfractured non-pathological patellas aged between 18 and 73 years, were indirectly measured from anteroposterior (AP) and lateral knee radiographs. Three dimensions including maximum patella height, maximum patella width and maximum patella thickness were taken and subjected to direct and univariate discriminant function analysis. Data entry and analysis were performed using Statistical Package for Social Sciences (SPSS version 20) software programme.

Results: In our study the mean (SD) of maximum patella height was 4.51 (0.25) cm in males and 3.96 (0.27) cm in females. The mean (SD) of maximum patella width was 4.92 (0.33) cm in males and 4.31 (0.35) cm in females. The mean (SD) of maximum patella thickness was 1.65 (0.18) cm in males and 1.45 (0.15) cm in females. Our study showed that male values of patella dimensions were higher than female and was found to be highly significant with P value < 0.001 . There were also significant differences of mean patella dimensions between male and female with P value < 0.001 . The maximum height of the patella was the best and most useful variable for sex determination in Kelantan population with average accuracy of 85.0%. Based on univariate discriminant analysis,

the success rate of correct sex discrimination using all three patella dimension was 86.4%.

Conclusion: Patella and its radiographic measurements are highly accurate and reliable for sex determination in Kelantan population.

Supervisor:

Dr Juhara Haron

Co-Supervisor:

Dr Meera Mohaiden Abdul Karem

THE ASSOCIATION OF PARIETAL SKULL THICKNESS WITH UNDERLYING EXTRADURAL HEMORRHAGE & PARIETAL SKULL FRACTURE AMONG MOTORCYCLISTS WITH MULTITRAUMA

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MMed (Internal Medicine)

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Introduction: Brain injury is the major cause of death among motorcyclists sustaining motor vehicle accidents. It includes subdural bleed, extradural bleed, diffuse axonal injury and so forth. Extradural bleed is the type of bleed that benefit most when treated early by the neurosurgeons. Extradural bleed is closely associated with overlying skull fracture. Parietal skull became the subject of study because it is the commonest bone to fracture, the bone is nearly uniform in thickness and is well protected by the helmet. There is yet to have any local parietal skull thickness data for Malaysian. Skull thickness is used by forensic scientists for the purpose of gender, age and racial determination. Plastic and reconstructive surgeons needs to the map out the parietal skull thickness at various locations for bone grafting. Skull thickness data may help in modification of the helmets designs and thickness to better suit the need for those who have thin skulls. Hence, it plays a role in head injury prevention.

Objectives: To determine the percentage of parietal extradural bleed among motorcyclists of different genders and to determine the association between parietal skull thickness with fracture and extradural bleed. **Methods:** This is a cross sectional study from April 2012 till September 2013 (17 months) enrolling 84 patients who sustained parietal scalp swelling. They are motorcyclists or pillion riders who sustained polytrauma post motor vehicle accident whom CT scans were done after sustaining polytrauma post motor vehicle accident. They underwent CT brain in Penang General Hospital and Hospital Universiti Sains Malaysia. Ethical approval obtained from Clinical Research Centre Penang Hospital (National Committee for Clinical Research, Ministry of Health) and The Human Research Ethics Committee of USM (JEPeM). These non-contrast enhanced CT Brain images were assessed using Picture Archiving Communication System (PACS). The parietal skull thickness underlying with parietal scalp swelling was measured. The presence of parietal skull fracture and underlying extradural bleed were documented. The landmarks for parietal skull measurement are Pterion, Asterion, Lambda, Bregma and Euryon. The demographic data and measurements collected were analyzed using PASW Statistics 18 software.

Result: The mean parietal skull thickness measured $0.58 \text{ cm} \pm 0.09 \text{ cm}$, thickest at lambda (0.74 cm), thinnest

at euryon (0.40 cm). The numbers of male and female patients who sustained parietal skull fractures and underlying extradural bleed were 26 (90%), 3 (10%), 12 (86%) and 2 (14%) respectively. The commonest age group was from 16–25 year-old. There was significant association between parietal skull thickness and underlying extradural bleed.

Conclusion: A thinner parietal bone is more susceptible to skull fracture and extradural bleed. Patient who has thin skull benefit most from helmet thickness modification.

Supervisor:

Associate Professor Dr Meera Mohaideen Hj Abdul Kareem

Co-supervisor:

Dr Hj Salwah Hj Hashim

PRE-OPERATIVE MECHANICAL BOWEL PREPARATION FOR ELECTIVE COLORECTAL RESECTION: IS IT NECESSARY ?

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MMed (General Surgery)

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Introduction: Pre-operative mechanical bowel preparation (MBP) for elective colorectal resection is a common practice worldwide. Its aim is to reduce the fecal and bacterial content within the bowel lumen, thus reducing the infectious complications. However, there are growing evidences that this practice is considered not necessary.

Objectives: The primary objective of this study is to determine the infectious complications among patients with or without preoperative MBP before colorectal resection. Secondary objectives are to obtain epidemiological data and study the relationship of MBP with duration of surgery, mortality, time for realimentation, and length of hospital stay.

Methods: This is a retrospective study of all patients who underwent elective colorectal resection between January 2006 to December 2012 in HTAA Kuantan. The decision for MBP is based on operating surgeon's preference.

Results: A total of 252 cases were analysed with 111 of them received preoperative MBP and the remaining 141 did not received. There are no statistical differences for anastomotic leakage, surgical site infection, extraabdominal infection and mortality in between the two groups. The patients without MBP were able to resume normal diet earlier than patients with MBP and this is statistically significant. The patient without MBP also had shorter duration of surgery and postoperative hospital stay, but this finding is not statistically significant.

Conclusion: Pre-operative MBP does not reduce the post operative infectious complications for patients undergoing elective colorectal resection. In addition, patients without MBP have shorter duration of surgery. They were also able to resume normal diet earlier with shorter duration of hospital stay.

Supervisor

Dr Mohd Nor Gohar Rahman

Co-supervisor:

Dr Zaidi Zakaria

Dr Mohd Zailani Mat Hassan

THE USE OF BARRIER WOUND PROTECTORS IN REDUCING SURGICAL SITE INFECTION IN CONTAMINATED AND DIRTY SURGICAL WOUNDS

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MMed (General Surgery)

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Universiti Sains Malaysia Health Campus, 16150
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Introduction: Surgical site infection is a surgical related complication which carries significant morbidities. It continues to pose as a challenge to surgeons to come up with methods to reduce its incidence. Barrier wound protectors are non-pharmacological tools which protects the incised wound from contaminants that predisposes it to infections. Its use in elective surgical procedure produced promising results and with little data on emergency abdominal surgery, its protective property is tested in contaminated and dirty surgical wounds. Objective: To assess the wound infection rates between wounds with and without wound protectors and to show that there is a reduction in surgical site infection when wound protectors are used in dirty and contaminated surgical wounds.

Methods: This is randomised controlled trial that was carried out in Hospital Raja Permaisuri Bainun Ipoh (HRPB), a state hospital. The study was carried out from 7th of January 2013 to 31st of October 2013. Patients were grouped into two groups; Contaminated and Dirty Surgical Wound. In each patients were randomised into control and intervention groups. In the intervention group patients received the barrier wound protector while the control group did not

Results: A total of 110 patients were recruited in this study. Forty six patients in the contaminated surgical wound while 64 patients in the dirty surgical wound group. In the contaminated wound group 23 patients were randomised into receiving wound protector (WP) while 23 did not. In the dirty wound group; 32 patients received the WPs while the other 32 did not. In the contaminated wound group, the wound infection rate in the control group was 60.8% and in the intervention group was 26%. There were 6 out of 23 patients with WP that developed surgical site infection (SSI) while 14 out of 23 patients without WP developed SSI. The reduction in SSI in the intervention was statistically significant (P value 0.017). In the dirty surgical wound group, seven out of 32 patients developed SSI in WP group while 17 out of 32 patients develop SSI in the control. The reduction in SSI rate was significant (P value 0.010). There was significant drop in wound infection rates from 53.1% to 21.8% in the dirty wound group.

Conclusion: The use of WPs in contaminated and dirty wounds in emergency abdominal surgery significantly reduced wound infection rates. The reduction in wound infection rates will be beneficial in reducing healthcare cost of treating SSI, reducing morbidities, physical and psychological impact on patients

Supervisor:

Dr Mohd Ridzuan Abdul Samad

Co-Supervisor:

Dr Yan Yang Wai

THE EFFECTS OF XYLENE ON RECOGNITION MEMORY AND HIPPOCAMPUS OF ADOLESCENCE FEMALE SPRAGUE-DAWLEY RATS

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MSc (Clinical Anatomy)

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Introduction: Xylene is a chemical that belong to the group of volatile organic compound (VOC). The volatile organic compound is also known as BTEX since it includes of benzene, toluene, ethyl benzene and xylene. Xylene is widely used in many industrial and histological laboratory fields. Xylene is also considered as environmental contaminants, as it can be identified in the atmosphere and in surface and treated waters. The main target organ of xylene exposure is the central nervous system. Studies showed that xylene exposure may lead to memory deficits. However, the effect of xylene on the cellular level of the brain is still unclear. Hippocampus is the main functional part of brain that contributes to the storage of memory.

Objectives: The purpose of this study was to investigate the effect of xylene on the recognition memory based on object recognition test. This study also evaluated the neurotoxic effect of xylene at the cellular level of hippocampus by observing the histological changes in CA1, CA2, CA3, and dentate gyrus regions.

Methods: Twelve 28 days old female Sprague-Dawley rats were divided into control and xylene group. The xylene group was given 8.47mmol/kg/day of xylene in olive oil vehicle via oral gavage for 2 weeks. The control group received only olive oil vehicle via oral route for 2 weeks. Object recognition test was conducted at the end of the xylene exposure period. Then, the rats were sacrificed and the sections of hippocampus were stained with cresyl fast violet. The obtained data was analysed using the SPSS version 20.

Results: The study found that the xylene exposure did not significantly impair the recognition memory based on object recognition test. In addition, it was found that there was significant reduction in total exploration time in xylene group as compared to the control group during the first trial of object recognition test. However, the study found that there was significant reduction in the number of pyramidal cell in CA1, CA2 and CA3 subfields of hippocampus in xylene group in comparison to control. There was also significant neuronal loss in granular cell of dentate gyrus in xylene group compared to the control. However, there was no significant difference in the thickness of layers in CA1 subfield of hippocampus between both groups.

Conclusion: The present study found that xylene exposure can cause significant reduction of cells in the CA1, CA2, CA3 subfields and dentate gyrus of hippocampus but did not impair the recognition memory ability.

Supervisor:

Dr Nurul Aiman Mohd Yusof

Co-supervisor:

Dr Mohd Asnizam Asari

Dr Nazlahshaniza Shafin

Dr Wan Faiziah Wan Abdul Rahman

**MEDICAL STUDENTS' KNOWLEDGE ON FEEDBACK
AND THEIR PERCEPTION TOWARDS THE FEEDBACK
SYSTEM IN SCHOOL OF MEDICAL SCIENCES,
UNIVERSITI SAINS MALAYSIA**

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MSc (Medical Education)

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Introduction: Feedback and students' perception towards feedback has gained increasing attention in the educational literature recently, yet it is a largely unexplored area. The importance of feedback has been perceived unfavourably by medical students. This may be due to lack of knowledge on feedback and awareness of its benefits.

Objectives: This study focused on students' knowledge on the concept of feedback and their perception towards the feedback system practiced in the School of Medical Sciences, Universiti Sains Malaysia.

Method: This was a cross-sectional study of year 1, 3 and 5 medical students. The variables included were gender and their year of study. A validated questionnaire was used to conduct this study. School and ethical committee clearance were obtained prior to the start of the study. Data obtained was analysed using Statistical Package for Social Sciences (SPSS) version 20.

Results: A total of 433 (80.5%) respondents participated in this study. The score of students' knowledge on feedback was 13.98/20 (SD 2.30) and the perception of students' towards feedback was 31.9/60 (5.14). It was found that there were no significant differences between students' knowledge level with the years of study and gender (P value >0.05). Similarly, there were no significant differences between students' perception on feedback with the years of study and gender (P value >0.05). In addition, it was found that there was a poor correlation between medical students' knowledge and their perception on feedback ($r^2 = 0.02$).

Conclusion: Findings revealed that students have average knowledge on feedback and have perceived feedback practice neutrally. There were no associations between students' knowledge level and perception with years of study and gender. However, students' perception level decreases as their year of study progresses. Areas of concern found in this study were the factors that are involved in feedback practice, which are the givers of feedback, timing of feedback and the mode of feedback. Further study should be conducted for further improvements of feedback practice.

Supervisor:

Dr Muhamad Saiful Bahri Yusoff

Co-supervisor:

Dr Nik Mohd. Rizal Mohd. Fakri

**SURVIVAL STUDY AND PROGNOSTIC FACTORS
OF OVARIAN CANCER REGISTERED IN HOSPITAL
UNIVERSITI SAINS MALAYSIA**

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MSc (Medical Statistics)

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

Introduction: Ovarian cancer is a common cancer, leading to death among female in Malaysia.

Objective: To determine the 5-year survival rate among

patients with ovarian cancer registered at Hospital USM and identify its prognostic factors.

Methods: A retrospective cohort study of 127 ovarian cancer patients registered in Hospital USM from 1st January 2002 until 31st December 2011. Only ovarian cancer patients confirmed with histological were selected with strict inclusion and exclusion criteria. Patients were then followed up until one year study period after recruitment phase. Data were analysed using Cox proportional hazard regression analysis. Results: The overall five-year survival probability of ovarian cancer was 35.2% (95% CI: 25.7, 50.1). The significant prognostic factors of ovarian cancer were FIGO stage [adjusted hazard ratio (AHR) = 2.53, 95% CI: 1.44, 4.45, $P = 0.001$], loss of appetite [AHR = 1.95, 95% CI: 1.23, 3.11, $P = 0.005$] and presence of pleural effusion [AHR = 1.98, 95% CI: 1.19, 3.30, $P = 0.008$]

Conclusion: Overall, the survival probabilities of ovarian cancer in Hospital Universiti Sains Malaysia were low and future study needs to be done to reduce burden of disease, quality of life and mortality among ovarian cancer patients.

Supervisor:

Associate Professor Norsa'adah Bachok

Co-Supervisor:

Dr Siti Azrin Abd Hamid

FACTORS ASSOCIATED WITH SEVERITY OF KYPHOTIC DEFORMITY AMONG SPINAL TUBERCULOSIS PATIENTS

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MSc (Medical Statistics)

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Introduction: Spinal tuberculosis (TB) is a form of skeletal disease and represents the most common form of skeletal tuberculosis. It affects all individual either children or adults. TB spine is a slowly developing disease and it takes three to four months in pathogenesis before kyphosis starts developing. Complications such as kyphotic deformity and paraplegia affect the quality and span of life.

Objective: To determine the proportions and factors associated with severity of kyphotic deformity among spinal tuberculosis patients.

Methods: A retrospective record review of 85 patients with spinal tuberculosis was conducted at Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab II from 2005 to 2014 and 2008 to 2014 respectively by assessing the medical records and X-ray finding. The study was conducted from 1st September 2013 to 31st May 2014. Kyphosis angle was measured in each patient by two orthopaedic surgeons from both hospitals and had been categorized into kyphosis $\leq 30^\circ$ and kyphosis $> 30^\circ$. Socio-demographic characteristics, clinical presentations, imaging study findings and disease characteristics were reviewed from the medical records. Multiple logistic regression was applied using IBM SPSS 20 and Stata (SE) 11.

Results: Majority of the patients were aged over 50 years (47.06%), male (62.4%) and Malay (97.6%). Proportion of kyphotic deformity in kyphosis $\leq 30^\circ$ was 90.6% (95% CI 0.84, 0.97) and kyphosis $> 30^\circ$ was 9.4% (95% CI 0.03, 0.16). Common presenting complaints included back pain

(71.8%), pain elsewhere (61.2%) and numbness of lower limbs (35.3%). The mean (SD) angle of kyphosis involved was 10.38° (12.10). Most of the patients involved one or two vertebral bodies (84.7%) during diagnosis. The commonest type of vertebral affected was thoracic (35.3%). Most of the patients had duration of illness more than one year (58.8%). Three significant adjusted associated factors that affected severity of kyphotic deformity were age of the patient at the time of diagnosis ($b = -3.52$, Adjusted OR = 0.03, 95% CI 0.001, 0.69), number of vertebral bodies involved ($b = 3.67$, Adjusted OR = 39.33, 95% CI 2.08, 744.59) and type of vertebral affected; thoracic ($b = 3.68$, Adjusted OR = 39.61, 95% CI 2.52, 623.77).

Conclusion: Younger patients were at risk to develop greater kyphotic deformity compared to older patients. Increasing in vertebral involvement particularly in thoracic region may develop severe kyphotic deformity as well. Kyphotic deformity should be prevented with early detection and effective treatment.

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PROGNOSTIC FACTORS AND SURVIVAL OF PATIENTS WHO UNDERWENT CORONARY ARTERY BYPASS GRAFTING IN HOSPITAL UNIVERSITI SAINS MALAYSIA: 2006-2011

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Introduction: Coronary artery bypass grafting (CABG) is the most common surgical procedure for coronary artery disease. Differences in demographic, culture and belief may give different results in survival for Malaysian compared to other countries.

Objectives: The objectives of this study were to determine the five-year survival rate of patients who underwent CABG at Hospital USM and to identify the prognostic factors that influence the survival of patients.

Methods: A retrospective cohort study was conducted involving 139 patients who underwent CABG at Hospital USM, Kelantan from January 2006 until December 2011. All patients who fulfilled the criteria were included in the study. Their survival status was determined by medical records, telephone calls and also from the National Registration Department. The Kaplan-Meier and Cox proportional hazard regression analyses were used in the statistical analysis.

Results: Overall five-year survival rate of patients who underwent CABG were 86.4%. After adjusting for other variables, the significant prognostic factors that influence the survival of patients were female (adjusted HR 4.8, 95% CI: 1.39, 16.39, P value=0.013) and ejection fraction less than or equal 50% (adjusted HR 14.4, 95% CI: 4.59, 45.23, P value < 0.001).

Conclusion: The five-year survival rate for patients who underwent CABG in this study was high. The prognostic factors identified were similar with other studies findings which are female and patients with ejection fraction less than

or equal 50%. Women were having poorer prognostic had lower survival rate compare to men. Besides, patient with ejection fraction less than or equal 50% also was found as a predictor factors to increase the mortality risk after CABG.

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SURVIVAL AND PROGNOSTIC FACTORS OF ADULT TUBERCULOUS MENINGITIS IN PENINSULAR MALAYSIA

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Introduction: Tuberculous meningitis causes substantial mortality despite its low incidence. Identification of prognostic factors is crucial for better clinical management. Objective: This study was performed to determine the survival and prognostic factors of adult tuberculous meningitis patients in peninsular Malaysia.

Patients and Methods: The medical records of 217 adult tuberculous meningitis patients treated or follow up in Hospital Kuala Lumpur (HKL), Hospital Pulau Pinang (HPP), Hospital Sultanah Aminah Johor Bahru (HSAJB) and Hospital Universiti Sains Malaysia (HUSM) from 1st January 2006 to 31st December 2012 were reviewed retrospectively. Data collected include socio-demographic background, clinical and treatment characteristics of the patients. Survival status and duration were determined with one year follow up period until 31st December 2013. Data entry and analysis were accomplished using Stata SE version 11.0. The Kaplan-Meier method was used to perform survival estimates while the log-rank test and the Cox proportional hazards regression model were employed to perform univariable analysis and multivariable analysis of the variables respectively.

Results: The overall survival probability of adult tuberculous meningitis was 36.8% (95%CI 0.23, 0.50) with a median survival time of 244 days. Significant prognostic factors were GCS score (aHR 0.71, 95% CI 0.65, 0.76; $P < 0.001$), HIV status (aHR 1.94, 95% CI 1.19, 3.15; $P = 0.008$), headache (aHR 0.48, 95% CI 0.31, 0.76; $P = 0.002$) and meningeal enhancement (aHR 0.47, 95% CI 0.30, 0.74; $P = 0.001$), nausea (aHR 2.21, 95% CI 1.33, 3.66; $P = 0.002$) and vomit (aHR 0.58, 95% CI 0.36, 0.93; $P = 0.023$).

Conclusion: Survival of adult tuberculous meningitis in peninsular Malaysia was relative low. Patients with HIV positive, low GCS score, presence with nausea had higher risk of mortality whereas patients presence with headache, vomiting and meningeal enhancement had lower risk of mortality. Early diagnosis and prompt treatment should be implemented to reduce the mortality.

Supervisor:

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TIME SERIES ANALYSIS AND FORECASTING OF TUBERCULOSIS TREATMENT SUCCESS AMONG TB/HIV CO-INFECTION AND ITS ASSOCIATED FACTORS

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Introduction: WHO was chosen year 2015 as the targets of halving tuberculosis mortality and prevalence. One of the six strategies developed by WHO in order to stop TB is by addressing TB/HIV high-risk groups. In order to reach the target of reducing TB infection by 2015, screening and treatment should be done effectively by targeting at high-risk populations.

Objective: This study was aimed to determine the pattern and time series model of tuberculosis treatment success rate among TB/HIV co-infection in Kelantan and forecasting the rate using the best identified model for five years. The other objective was to determine the associated factors that contribute to the tuberculosis treatment success among TB/HIV co-infection.

Methods: A cross-sectional study was carried out from September 2013 to May 2014 which involved all TB/HIV co-infection cases ($n = 1562$) in Kelantan from January 2005 to December 2012. The monthly tuberculosis treatment success rate among TB/HIV co-infection was calculated and analysed using Exponential Smoothing models and Box-Jenkin's models. The best model was chosen based on the Mean Square Error (MSE) and Mean Absolute Percentage Error (MAPE). The associated factors of tuberculosis treatment success among TB/HIV co-infection were analysed using multivariable logistic regression.

Results: There was no trend, seasonal, and cyclical pattern observed in the monthly tuberculosis treatment success rate among TB/HIV co-infection. The irregularity of outliers was found in November 2011 with the highest rate. The best Exponential Smoothing model was Single Exponential Smoothing (SES) while the best Box-Jenkin's model was Mixed Autoregressive Moving Average (2,2) or ARMA(2,2). The forecasted rate obtained by SES was 26.9% whereas the forecast rate obtained by ARMA(2,2) were around 27% to 28%. Male [Adjusted Odds Ratio: 0.35, 95% Confidence Interval: (0.17, 0.71)] was found to have lower chance of having tuberculosis treatment success compared to female patients. Meanwhile, having positive tuberculin test [Adjusted Odds Ratio: 2.38, 95% Confidence Interval: (1.36, 4.16)] was found to have higher chance for getting tuberculosis treatment success compared to those who had negative result.

Conclusion: The expected rates of tuberculosis treatment success among TB/HIV co-infection in Kelantan were relatively low. The result suggested that gender and tuberculin test result were associated with the tuberculosis treatment success rate among TB/HIV co-infection in Kelantan.

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ADHERENCE TO CAPECITABINE AND ITS CONTRIBUTING FACTORS AMONG CANCER PATIENTS IN MALAYSIA

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Introduction: Ensuring adherence to oral chemotherapy is important to prevent disease progression, prolong survival and sustain good quality of life of the patients. Capecitabine is a complex chemotherapy regimen and has many side effects that might affect patients' adherence to the treatment.

Objectives: The objectives of this multi-centred, cross sectional study were to determine the adherence level to capecitabine and its contributing factors among cancer outpatients in Malaysia.

Methods: Hundred and thirteen cancer patients on single regime capecitabine were recruited from Hospital Sultan Ismail and Hospital Kuala Lumpur from October 2013 to March 2014. Adherence to capecitabine was determined based on the adherence score using the validated 11-items Medication Compliance Questionnaire. Information regarding patients' socio demographics, disease, and treatment characteristics were obtained from medical records. Satisfaction score was measured using a validated 25-item Patient Satisfaction with Healthcare questionnaire.

Results: The mean adherence score was 96.1% (standard deviation: 3.29%). Only 17.7% of the study participants were fully adhered to their treatment with 100% adherence score. Contributing factors of adherence to capecitabine were Malay patients [$b = 1.3$; 95% confidence interval (CI): 0.21, 2.43; $P = 0.020$], female [$b = 1.8$; 95% CI: 0.61, 2.99; $P = 0.003$], satisfaction score [$b = 0.08$; 95% CI: 0.06, 1.46; $P = 0.035$], absence of nausea and vomiting [$b = 2.3$; 95% CI: 1.12, 3.48; $P < 0.001$] and absence of other side effects mainly lethargic, headache and alopecia [$b = 1.45$; 95% CI: 0.24, 2.65; $P = 0.019$]. These factors only explained 26% of the variation in adherence to capecitabine.

Conclusion: Despite high adherence score to capecitabine among cancer patients in local population, most of them were not fully adhered. Attention should be given more to non-Malay patients, male and patients presented with nausea and vomiting as well as other side effects. Sufficient information, proactive assessment and appropriate management of side effects would improve patient satisfaction thus create motivation for the patients to adhere to their treatment plans.

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