

Abstract

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

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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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 axotomized 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.

Methodology: Adult female Sprague-Dawley rats were used for this study. At six weeks postoperatively, 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:
Professor 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:

Professor Dr. Jafri Malin Abdullah

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

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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.

Patients and 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

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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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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 three 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 & 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 preoperative 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

Material and 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 porforma. 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 Hopsital 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 two factors do have some contribution to the tumour grade and should be included in further studies which look into the prognosis of meningioma.

Supervisor:

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THE CLINICAL PREDICTORS FOR SUCCESSFUL RING PESSARY TREATMENT BASED ON POPQ SYSTEM IN PATIENT WITH PELVIC ORGAN PROLAPSES IN UROGYNAECOLOGY CLINIC, HOSPITAL KUALA LUMPUR

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Introduction: Pelvic organ prolapse refers to loss of support for uterus, bladder, colon or rectum leading to prolapse of one or more of these organs into vagina primarily caused by the weakening of the pelvic floor. There were multiple unstandardised staging system of POP being use that has give rise to wide range of prevalence observed. The International Continence Society (ICS) has developed a standardized definition for the condition of POP in 1996 which is still under-utilized by gynaecologist worldwide. We believe that by POPQ assessment, we can predict and triage appropriately groups of patient which will benefit with ring pessary alone or whether there is further need for corrective surgery. This will aid the counseling for POP treatment and further reduces the morbidity from unnecessary surgery for POP.

Objectives: To determine the factors for successful ring pessary treatment in POP patient based on the nine points of POPQ and to determine the successful ring pessary fitting among patient with Stage I, II, III and IV POP across different compartment of POP.

Methodology: This is a cross sectional study that was carried out in the Urogynaecology Unit, Obstetrics and Gynecology Department, Hospital Kuala Lumpur from January 2011 to December 2012. We recruited the study participants by purposive sampling of all women with POP who fulfilled the inclusion criteria. Patient was given the questionnaire for demographic data and symptoms of prolapsed based on POPDI (Pelvic Organ Prolapse Distress Inventory). POPQ were measured by urogynaecologist during their first clinic visit. The ordinal translational stages were recorded. Patient was given follow up in 4 weeks and the outcome measured whether the ring pessary was retained in the vagina or has dropped out prior to that. All data entries and analysis were carried out using SPSS version 20.

Results: Out of 101 patients, 90 women (89 %) were successfully fitted with ring pessary and the remains 11 failed pessary fitting. By using ROC Curve, the best cut-off score for each points of POPQ were 0.5cm for points Aa (sensitivity=67.8%; specificity=54.5%), Ba (sensitivity=68.9%; specificity of 63.6%) and C (sensitivity=51.1%; specificity=63.6%). For

point Gh 3.5cm (sensitivity=63.3%; specificity=45.4%), point Pb 2.5cm (sensitivity=17.8%; specificity=81.8%), point Tvl 6.5cm (sensitivity=45.6%; specificity=81.8%). Value of -0.5cm was seen for point Ap (sensitivity=57.8%; specificity=45.4%) and point Bp (sensitivity=54.4.8%; specificity=45.4%) and for point D -2.5cm (sensitivity=46.7% a; specificity=63.6%). However, all the measurement had AUC of between 0.53 to 0.66. Although the findings were not statistically significant, the observed finding showed that ring pessary fitting was most successful in patients with grade 3 and above in all compartments of prolapse, with bivariate analysis [quoted as Odds Ratio (OR) and 95% Confidence Interval 9CI] for cystocoe (OR: 0.936; 95% CI=0.431–2.032), uterovaginal prolapse (OR: 1.269; 95% CI=0.557–2.892) and rectocoele (OR: 1.549; 95% CI=0.835–2.873).

Conclusions: The nine points of POPQ measurement can predict successful ring pessary fitting but does not strongly discriminate the outcome for successful ring pessary fitting. Grade 3 and above for all compartments of POP were observed to be most successful for ring pessary fitting, however the difference was not statistically significant.

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).

Methodology: 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 3.0–3.4mmol/L while 30% (n=3) were between 2.5–2.9mmol/L. The mean potassium level was 3.3mmol/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 THREE 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.

Patients and Methods: A cross sectional descriptive analysis was performed on 388 women who delivered in Hospital Sultanah Nur Zahirah. Data was collected using a structured questionnaire. Patient contacted three months postpartum 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 X 2 test and multiple logistic regression.

Results: The overall prevalence of urinary incontinence three months postpartum 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% 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 seeking treatment was low. Women need to be educated regarding the problems, its causes and treatments available for urinary incontinence.

Supervisor:

Professor Dr Nik Mohamed Zaki Nik Mahmood

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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 randomized 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:

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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.

Methodology: 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 $r = -0.702$, $P = 0.001$). 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 $r = +0.560$, $P = 0.010$ and Spearman's $r = -0.475$, $P = 0.034$ 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:

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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 (16.1mmHg vs 14.68mmHg , $P=0.011$).

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

ANATOMICAL VARIANTS OF SURGICALLY IMPORTANT LANDMARKS IN THE SPHENOID SINUS: A RADIOLOGIC STUDY IN MALAYSIAN PATIENTS

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Introduction: The sphenoid sinus is not only involved in functional endoscopic sinus surgery, but also serves as a

route to the pituitary gland. There is potential risk of damage to the optic nerve or the internal carotid artery that lie on the walls of the sphenoid sinus, if the surgeon is unaware of its variation in the local population.

Objectives: This study aims to determine the rate of bony dehiscence and the rate of protrusion of the optic nerve and internal carotid artery in the Malaysian population. We also aim to see if there is a statistically significant association between pneumatization of the anterior clinoid process and protrusion of the optic nerve.

Patients and Method: This cross-sectional study from 1st December 2012 to 31st May 2013, involved the analysis of 300 Computed Tomography (CT) scans of the brain, paranasal sinus and head and neck, at Hospital Raja Permaisuri Bainun, Ipoh, Perak. Scans were analyzed with the Osirix software and statistical results generated with Statistical Package for Social Sciences (SPSS) software.

Results: The rates of optic nerve dehiscence, internal carotid artery dehiscence and internal carotid artery protrusion in the Malaysian population are 7.0%, 3.0% and 10.0% respectively, which are within the range of international rates. The rate of optic nerve protrusion is 2.3%, which is lower than the range of international rates. There was no statistically significant relationship ($p>0.05$) between anterior clinoid process pneumatization and optic nerve protrusion, noted on Pearson Chi square test. The rate of Onodi cell in our population is 14.3%. The average vertical height of the ostia from the roof of the posterior choanae is 1.42 cm. The average horizontal distance of the ostia from anterior end of superior turbinate is 1.58 cm, and the average oblique distance of the ostia from the anterior nasal spine is 5.35 cm.

Conclusion: It may be safe to say that the results obtained may indeed be a true reflection of the rates in our Malaysian population. Larger studies however, for a longer period of time in the future could countercheck or reinforce our findings since there is very limited local data to compare with.

Supervisor:

Associate Professor Baharudin Abdullah

Co-Supervisor:

Dr Ramiza Ramza Ramli

Dr Philip Rajan

Dr Mohd Shaffie B Baba

Dr Harvinder Singh

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.

Methodology: 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 Ramli

Co-Supervisor:

Associate Professor Dr. Rosdan Salim

Dr Amirozi 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.

Methodology: A cross-sectional case study was conducted in Otorhinolaryngology clinic, USM from December 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 HbA_{1c} level. HbA_{1c} ≤ 7 were grouped as controlled DM while HbA_{1c} > 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.

Co-Supervisor:

Associate Professor Dr Mohd Khairi b Md Daud

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: Transposas 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 transposas 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 analyzed, 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: Transposas 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

CORRELATION OF CT ANGIOGRAM OR ANGIOGRAM WITH INTRAOPERATIVE FINDINGS OF EXTREMITIES VASCULAR INJURY

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Introduction: Vascular injury has been on the increase due to the increase in accidents involving motor vehicles resulting in the fractures of the extremities. The problem involved in the management of such incidences is because of lack of vascular team expertise as well as late diagnosis and delayed referrals. Thus management of vascular injury has become of paramount importance for the orthopedic surgeons especially in our country. The objective of this study was to evaluate the intra-operative and radiological findings for vascular injuries of extremities and to correlate both the findings.

Methodology and Study Design: This study is a retrospective study carried out in Hospital Universiti Sains Malaysia from February 2006 till February 2013 involving 45 patients. Data were obtained from records of all patients who had vascular injury of the extremities and who underwent either conventional or CT angiogram along with their clinical findings.

Results: The mean age of patients was 25.37 years with a standard deviation of 13.039 with the majority being males. Transection arterial injuries were more common with 34 (75.6%) patients than other types of arterial injuries. The mean length of injured vessel (intra operative) was 8.5 cm, whereas, the mean graft length harvested was 10.8 cm. Delayed above knee amputation was done in 5 patients (11.1%). It was found that there was a strong correlation between the length of injured vessel and the bypass graft length. CTA and CA have a 100% specificity and sensitivity in determining vascular injury based on the type of arterial injury (P -value < 0.01). However, CTA and CA have only around 40% and 24% specificity and sensitivity in determining vascular injury respectively based on the length of arterial injury (P -value > 0.01). The mean ischemic time in our study was 25.31 hours. There was no significant correlation time between ischemic time and length of injured vessel (intra-operative). The mean response time in our study was 272 minutes. The length of injured vessel (vessel thrombosis) on CTA/ CA strongly correlates with response time as evidenced by P -value < 0.05 in this study.

Conclusions:

1. CTA and CA are 100% sensitive and specific when compared to intra-operative findings for the type of arterial injury. The commonest type was transaction type of injury.
2. There was no significant correlation between CTA/CA and intra-operative finding with regards to length of injury measured.
3. There is no significant correlation between duration of ischemic time and length of vessel injury. However, the duration of response time has a significant effect on the propagation of thrombosis in the injured vessel.
4. There is a strong correlation between the length of injured vessel (intra-operative) and the length of bypass graft used. This enabled us to devise a formula to recommend the optimal graft length.

Supervisor:

Associate Professor Dr Wan Faisham

Co-Supervisor:

Associate Professor Mohd. Shafie Abdullah

TIBIAL PLATEAU GEOMETRY AND THE ASSOCIATION WITH ANTERIOR CRUCIATE LIGAMENT INJURY: A MAGNETIC RESONANCE IMAGING STUDY

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Introduction: The geometry of the tibial plateau is complex and asymmetric. Previous research has characterized subject-to-subject differences in the tibial plateau geometry in the sagittal plane on the basis of a single parameter, the posterior slope. The geometry of the tibial plateau has been largely ignored as a source of possible risk factors for anterior cruciate ligament injury. Discovering the association between anterior cruciate ligament injury with the tibial plateau may help develop strategies for the prevention of anterior cruciate ligament injuries.

Study design: A case control retrospective study to determine association of medial tibial slope(MTS), lateral tibial slope(LTS), coronal tibial slope(CTS) and medial tibial depth(MTD) in male patients with and without ACL injury. MRI image of knee region from year 2009 till December 2012 was obtained from the Radiology Department in Hospital University Sains Malaysia.

Objectives:

1. To determine mean of tibial plateau geometry (MTS,LTS,CTS and MTD) in non anterior cruciate ligament injury subjects and anterior cruciate ligament injury subjects.
2. To identify association between tibial plateau geometry(MTS,LTS,CTS and MTD) in normal knee and in anterior cruciate ligament injured knee.

Methods: Sixty six patients which divided equally in two groups were selected through a search in the computerized databases in the Hospital University Sains Malaysia hospital. The medial tibial slope, lateral tibial slope, coronal tibial slope and medial tibial depth were compared between two groups. A preliminary t test was performed to establish any existing differences between groups.

Results: For the non injured ACL group, the mean of medial tibial slope is 5.74 degree and the mean for lateral tibial slope is 3.44 degree. For the injured ACL group, the mean of medial tibial slope is 6.85 degree and the mean of lateral tibial slope is 4.41 degree. The mean depth of the subchondral bone concavity of the medial compartment of the tibia is 0.24 cm for non injured ACL subjects and 0.38 cm for injured ACL group. Neither the medial tibial slope and the lateral tibial slope nor the medial tibial depth had statistically significant between

the groups (0.05). The mean of coronal tibial slope is 1.03 degree for the non injured ACL group and 2.16 degree for the injured ACL group. The injured group had increased CTS and was statistically significant ($P<0.05$).

Conclusion: This study describe the geometry of tibial plateau by three slopes (medial tibial slope, lateral tibial slope and coronal tibial slope) and the depth of the medial tibial condyle in two groups (anterior cruciate ligament injury and non anterior cruciate ligament injury) in Malaysian. An increase coronal tibial slope may indicate a risk of injury. However, there is no correlation between the medial tibial slope or lateral tibial slope or medial tibial depth and ACL injury.

Supervisor:

Dr Tengku Muzaffar Tengku Sihabudin

Co-Supervisor:

Dr Ahmad Helmy Abdul Karim

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.

Patients and 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

THE DEVELOPMENT OF TIBIOFEMORAL ANGLE IN CHILDREN

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Introduction: The normal development of tibiofemoral (TF) angle evolves through a number of stages in growing child. It starts from varus angle in the infant then gradually changes to valgus angle until it reaches maximum valgus then gradually decreases to adult valgus angle. However, the age when the transition time from varus to valgus and the maximum peak valgus happen are different from one population to the others. We conducted this study to determine pattern of changes in TF of healthy children among Malay population.

Objectives: The aims of this study were to identify the profile of TF angle in growing child from two to six years of ages in healthy Malay children by clinical measurement.

Methodology: This cross sectional study on TF angle was conducted among 160 normal healthy children using clinical measurement methods. The age of the children ranged from two to six years and they were classified into five specific age groups. Each of age group contained 32 children with equal sex distribution (16 boys, 16 girls). TF angles for both of lower limbs (right and left) of each child were measured by clinical method using universal goniometer during standing position.

Result: This study had showed a very good inter-observer reliability of TF angle measurement with intra-class correlation coefficient (ICC) of 0.87 with narrow margin of 95% confident interval (95% CI: 0.73, 0.94). The TF angle profile in children between age of two to six years of age were in valgus alignment. The mean of TF angle for children at two years old, three years old, four years old, five years old and six years old were 2.250 (SD = 0.53), 8.730 (SD = 0.95), 7.530 (SD = 1.40), 7.270 (SD = 1.14) and 6.720 (SD = 0.98) respectively. There were no statistically significant differences between the mean TF angle of boys and girls in all age groups except for five years old group in which girls had mean of TF angle of 7.560 (SD = 0.95) whilst boys had mean TF angle of 6.970 (SD = 1.26) with *P*-value of 0.037.

Conclusion: This study showed that the TF angle among the study population was valgus since age of two years. The TF angle increased to maximum at age of three years with the TF angle of 8.730 (SD = 0.95) then gradually decreased with age from three until six years old. There were no statistically significant mean differences of TF angle between boys and girls.

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 immobilizer 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.

Methodology: 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 immobilized 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 HAEMOPHILIAC JOINT USING RHENIUM SYNOVECTOMY – 6 MONTHS FOLLOW UP

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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.

Patients and Method: 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 Mohamad

NECROTIZING FASCIITIS OF EXTREMITIES: A STUDY OF CLINICAL OUTCOME IN SARAWAK GENERAL HOSPITAL

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Introduction: Necrotizing fasciitis is a serious clinical syndrome with high morbidity and mortality hence the need to have more data to help in managing it effectively. Sarawak as a unique state in term of location and demographic location could provide a new dimension in the perspective of this dreadful disease.

Methodology: In this retrospective study, medical record of patients discharged from Sarawak General Hospital with diagnosis of necrotizing fasciitis from the year 2008 till 2011 were reviewed. Evaluation of demographics, diagnosis, microbiology and treatment outcome including mortality and morbidity was studied. Data was collected and analyzed using SPSS programme version 20.

Result: There were 75 patients included in this study, 46 were male and 29 were female with mean age group of 54 years. Majority of patients presented with triad of erythema, tenderness and swelling. Monomicrobial infection was more common and *Streptococcus pyogenes* remains the most

common isolated organism. Diabetes mellitus was the most common co-morbidity found. Mortality rate was 6.7% and amputation rate 22.7%. There was correlation between multiple co-morbidity and mortality. There was significant association between renal impairment and ICU admission, and between ICU admission and mortality.

Conclusion: Erythema, tenderness and swelling were the most common clinical findings. Monomicrobial infection was more common with *Streptococcus pyogenes* as the most common organism isolated. Diabetes mellitus was the most common co-morbidity. There was correlation between multiple co-morbidity and mortality. There was significant association between renal impairment and ICU admission, and between ICU admission and mortality.

Supervisor:

Associate Professor Dr Wan Faisham

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 six months up to two years based on previous study. Those who have a second nonfebrile 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 nonfebrile 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 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 is 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.

Conclusions: 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 FIVE 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 socio demographic, 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 three 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 five 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 Nik Ismail

Co-Supervisor:

Prof Hans Amin Rosternberghe

Dr Mohd Ikram Ilyas

COMPARING SHORT TERM EFFECTS OF UMBILICAL ARTERY CATHETER (UAC) TIP POSITION IN NEONATES: A RANDOMIZED CONTROL TRIAL

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Introduction: UAC tip placement has two positions - high and low UAC position. High position catheters are placed between thoracic 6 to thoracic 9, vertebra level. Whereby, low positioned catheters are placed between lumbar 3 to lumbar 4, vertebra level. Recent Cochrane review supports the usage of high position for UAC, however the studies included were dated decades ago and neonatal practice has advanced over the years. Hence, more studies on umbilical artery catheter position are definitely warranted at this time, especially in a setting of developing nations.

Objectives: The Primary objective of this study was to determine the short term complications of umbilical artery catheter position in newborn at 2 different levels. The secondary Objectives were to determine the incidence of aortic thrombosis, intraventricular haemorrhage, feeding intolerance, necrotising enterocolitis, hypertension, haematuria, and peripheral ischemic phenomenon associated with the umbilical artery catheters position. This study also compared the incidence of short term complications of umbilical artery catheter position in relation to gestational age and birth weight group.

Methodology: From March 2012 to August 2013, a sample of 180 newborn infants requiring UAC insertion, were randomly assigned to two groups, high (n=90) or low (n=90) position, using blocked randomization with concealment of allocation. Two infants, one from each group, dropped out from the study. The number of subjects needed was calculated based on the highest complications of aortic thrombosis

and peripheral vascular compromise observed in the latest Cochrane review 2009, with PS calculation, using a power of 0.8 and a two-tailed alpha of 0.05. Sample calculated was equal to 80 subjects in each group with a total of 160 infants. Hundred and eighty babies were included expecting a 10% drop-out.

Results: In both groups, the mean gestational age was 34 weeks and the majority of the infants were premature with respiratory distress syndrome. There were no significant differences between the two groups in terms of baseline data. The mean birth weight was 2.31 kg; majority of babies (53%) weighed more than 2.5 kg, in the high position. Overall incidence of complications were 20 (23%) in the low position group and 18 (20%) in the high position group ($P=0.76$). Comparing the complications observed between the high and low position group: IVH 9% vs. 6.7%, $P=0.58$; Feeding intolerance 4% vs. 6.7%, $P=0.51$; hypertension 6% vs. 4%, $P=0.51$; NEC and peripheral ischemic phenomena 0% vs. 2%, $P=0.25$ each. There were no haematuria or aortic thrombosis detected in this study.

Conclusion: This study showed that the rate of total complications in the low UAC position was comparable with the high UAC position (23% vs. 20%; $P=0.76$). Hence the use of low UAC position in newborn infants seemed to be acceptable in our current clinical practice.

Supervisor:

Associate Professor Dr Noraida Ramli

Co-Supervisor:

Dr Mohd Rizal Mohd Zain

Professor Dr Amin Hans Van Rostenberge

Dr Nor Rosidah Ibrahim

Dr Muhamad Zabidi Ahmad

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 teaches 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 two 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 Professor 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.

Methodology: 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 seven 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 STUDY OF A CEREBRAL STATE MONITORING AS AN PREDICTIVE TOOL TO PREDICT POSITIVE CT BRAIN SCAN FINDING IN MILD TRAUMATIC BRAIN INJURY PRESENTING TO EMERGENCY DEPARTMENT

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Introduction: Traumatic Brain Injury (TBI) is a global health problem. Despite of high incident of mild TBI, the ability to diagnose intracranial pathology in mild TBI is still lacking without the use of head computed tomography (hCT) scan. Since hCT is costly, not readily available in all hospital and exposes patients to radiation, the need to have other modality prior to performing hCT scan is crucial. The objective of this study was to assess the feasibility of cerebral state monitoring (CSM) as a predictive tool for positive hCT scan in mild TBI patients.

Objectives: The aim of this study were to determine CSM finding among patients with mild TBI and to determine the agreement between CSM finding and hCT scan finding in mild TBI.

Patients and Methods: This is a prospective observational study. It was conducted in Emergency and Trauma Department, Hospital University Sains Malaysia, Kubang Kerian, Kelantan. Patients with mild traumatic brain injury (69) were enrolled from June 2010 to November 2012. All 69 patients were measured their Glasgow Coma Scale (GCS) score, and Cerebral State Monitoring (CSM) before proceed for head CT scan.

Results: In this study, there was significant association between GCS score of 13, 14 and 15 with CSM finding. The P -value was = 0.003. It showed that as GCS score reduce, the CSM finding will be abnormal. This study also showed that there was a good level of agreement between CSM finding and hCT scan finding in mild TBI patients, Kappa = 0.72 with $P < 0.001$, 95% CI (0.545, 0.897). Our study also showed that CSM has high sensitivity (94.1%) and high NPV (97.1%) in predicting intracranial pathology following mild TBI.

Conclusion: CSM monitoring on admission of patients with mild TBI is a promising screening tool that may help emergency physicians to support the decision not to perform CT imaging in certain cases of low-risk mild TBI, due to high sensitivity and high negative predictive value.

THE RATE OF CONTAMINATED BLOOD CULTURE COLLECTED IN EMERGENCY DEPARTMENT, HOSPITAL UNIVERSITI SAINS MALAYSIA

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MMed (Emergency Medicine)

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Introduction: Blood culture is a vital investigation with major implication for the diagnosis of serious infection and selection of appropriate anti-microbial therapy. A positive blood culture can be the first step in reaching the definitive diagnosis in a patient with presumed sepsis. Unfortunately, false positives can occur due to contamination. As such, the onus is on the nursing and medical staffs to be responsible for safe and effective blood sampling, especially in an ED setting, where accurate blood sampling result can have a critical, imperative impact on the direction on patient management.

Blood culture contamination is defined as the growth of bacteria in the blood culture bottle that is not present in the patient's blood. It is a common phenomenon. While target rates for contamination have been set at 2 to 3%, in reality, the rate of blood culture contamination varies between departments and hospitals. In UK, Souvenir et al reveals that contamination of blood cultures is a common problem with contamination rates varying between 2% and more than 6%. In the emergency department of Hospital Universiti Sains Malaysia (HUSM), the annual positive blood culture rates fluctuated between 9.5–40.8%. Out of these, contaminated samples account for 2.7–14.3% of all positive cultures. Most of these false positive results were caused by endogenous human microbial flora. As a result, strict skin preparation and good venepuncture technique are important determinants in reducing the rate of contamination.

Methodology: This is cross-sectional study. All blood culture samplings who meet the inclusion criteria (and not meeting any exclusion criteria) were collected by various health care professional in ED HUSM. Patient's venous bloods were obtained according to their current practice of blood culture sampling. The person who obtains the blood culture will fill up the study document. For each month, the total number of cultures yielding organisms considered being contaminants (from a predefined list) and the total numbers of blood culture sets taken were reviewed by researcher via patients record in Microbiology and Parasitology lab, HUSM. To control for the continued isolation of significant bacteraemia, the number of Gram-negative organisms isolated will also be collected. Each blood culture was processed according to the recommendations of the Clinical and Laboratory Standard Institute (CLSI). The registrar in charge will determine which health care group to perform the blood culture task based on table of randomization provided to them.

Result: A total of 136 patients were recruited for this study. Mean age of the patient was 57.09 ± 18.63 , 50.7% were male and 49.3% were female. From 136 cultures obtained, 44 (32.4%) cultures were positive, while the other 92 (67.6%) samples were negative. Out of these 44 positive cultures, 27 samples were contaminated while 17 samples were non-contaminated. Therefore, the prevalence of blood culture contamination in the study population was 17 out of 136, which was 19.9%. Males, patients aged 50 to 69 years old and source of infection from genito-urinary tract had more contamination as compared to the others from the same variable category. However, these findings were not significant with P -value > 0.05 and 95% CI included 1. Among the working days, Friday had the highest prevalence of contamination (36.8%). However, it was statistically not significant with P -value = 0.061. The same finding was noted for variable weekend (P -value = 0.074) and patient's triage as semi-critical (P -value = 0.050). Blood samples taken during night shift had 4 times more likely to be contaminated when compared to those taken during morning shift and this finding was significant with P -value = 0.011. No significant difference was noted for samples taken during PM shift. There was no significant association between blood sample contamination with the designation of the person taking the blood culture, years of service, person's teaching place for blood culture taking, and whether the person was given proper teaching regarding blood culture taking before (P -value > 0.05).

Conclusion: As a conclusion, this study has been able to fulfil the objectives set forth at the start. It's shown that the blood culture contamination was far above the targeted rate. We had identified a few factors contributed to the contamination rate in ED HUSM such as working shift, patient's age and source of infection. Although these factors were statistically not significant, we hope that this can initiate future study for better understanding regarding blood culture contamination.

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 Kamauzaman

Co-Supervisor:

Associate Professor Nik Hisamuddin Abd Rahman

Dr Sabariah Faizah 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.

Methodology: 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 CROSS SECTIONAL STUDY ON PATIENTS PRESENTING TO EMERGENCY DEPARTMENT, HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN, MALAYSIA WITH HEADACHE AND FACTORS ASSOCIATED WITH ABNORMAL NEUROIMAGING FINDINGS

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Background: Headache is a common presenting complaint in the Emergency Department (ED). The decision of whether the patient needs an emergent neuroimaging as further evaluation of headache is crucial in terms of appropriate utilisation and cost effectiveness. The use of clinical predictors will provide a more accurate prediction of secondary headache disorders thus optimal care can be given efficiently in reducing mortality and morbidity.

Objectives: To study the prevalence of abnormal cranial CT scan in headache patient, describe the outcome (life or death) and to determine the clinical predictors of abnormal cranial CT scan findings.

Methodology: A total of 152 cases involving patients more than 12 years old presented to Emergency Department, Hospital Universiti Sains Malaysia, Kelantan with headache not related to trauma in 2010 to 2011 who undergone emergency cranial CT scan ordered from ED were included in this study. The case notes were retrospectively reviewed and data collected using a standardized proforma form.

Results: 152 non-trauma cranial CT scan were included in the study and 81 (53.3%) CT scans revealed clinically significant abnormalities. Only abnormal Glasgow Coma

Scale (3–14) and focal neurological deficit were found to be statistically significant in predicting abnormal scans in the study. Patients with abnormal GCS had 5.77 times (95% CI: 1.08–30.92) higher odds for an abnormal scan to those with normal GCS, adjusting for focal neurological deficit. Patient with focal neurological deficit had adjusted odds of 36.74 (95% CI: 6.68–202.14).

Conclusion: Abnormal GCS and the presence of focal neurological deficit are significant predictors for abnormal scan. They should serve as useful criteria for evaluating the utilization of emergency cranial CT scan for non-trauma patients in future studies.

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.

Methodology: 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 four 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

TWO 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.

Methodology: A randomized 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 two minutes ice compression to 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 two minutes after venipuncture procedure completed. Failure of two 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 Fauzi

Co-Supervisor:

Dr Abu Yazid Mohd Noh

FACTORS AFFECTING OUTCOME OF NON-TRAUMA OUT-OF-HOSPITAL-CARDIAC-ARREST PRESENTED TO HUSM IN KELANTAN

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Introduction: Sudden cardiac arrest is a global health concern, because the survival rate for out of hospital cardiac arrest (OHCA) throughout the world is still low. In Malaysia there is no study yet on outcome of out of hospital cardiac arrest. Many factors are influent in the outcome of OHCA especially in prehospital setting. Determining the impact of prehospital factors in OHCA can help in improving of outcome of OHCA.

Objective:

1. To determine the incidence of non-trauma OHCA presenting to HUSM.
2. To determine the survival rate of non-trauma OHCA patients presented to HUSM.
3. To determine the neurological outcome in non-trauma OHCA patients who survived at 7 and 30 days post arrest.
4. To determine the factors associated with survival of non-trauma OHCA patients.

Methodology: A prospective observational study was conducted from February 2012 until February 2013 on eligible patients with out of hospital cardiac arrest presented to ED HUSM. Patient data was collected using checklist and followed up within 30 days following resuscitation in ED. The association between factors that contribute to cardiac arrest and outcome of OHCA the analysed using SPSS version 20.

Result: The mortality rate is 100% ($n=51$) in this study and survival for admission post cardiac arrest is 29% ($n=15$). There is no significant association in comorbidities in the outcome of OHCA. Of these study, 11.8% ($n=6$) presented to ED HUSM with cardiac monitor showed ventricular fibrillation and most of the cardiac rhythm showed on cardiac monitor

are asystole. Most of the OHCA are witnessed by the family member, however there are no association between bystander CPR and outcome OHCA.

In this study, transported by EMS of critically ill patient to ED HUSM may give poor outcome of OHCA (95%CI 1.279, 33.034)($P=0.02$).

Conclusion:

1. The incidence for non-traumatic OHCA presented to HUSM from year 2011–2012 was 51 cases per 100,000 person, which was similar to the incidence in Asian population, but lower than the incidence in western countries.
2. The survival to hospital admission in our study was 29.4% and it was comparable to other study done in other hospitals. However, the survival to hospital discharge was devastating in which none of the patients survived. Thus, we need to improve our chain-of-survival and post arrest care as to improve our survival rate.
3. Neurological outcome within 7 days post admission in non-trauma OHCA presented to HUSM from year 2011–2012 was only 2% with CPC and OPC of 4 for each score. None of the patients survived beyond 7 days post arrest.
4. Factor significantly independant in predicting mortality in ED in our study population was trasportation of patients by EMS, with 6.5 times increased risk. This is because there is a break in the chain-of-survival. By improving each of the components in the chain-of-survival, a better outcome will be achieved.

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 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.

Methodology: 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.

Patients and 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.

Patients and 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

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 randomized 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 -3.8mmHg 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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MMed (Family Medicine)

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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 randomized 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 Professor Dr Azidah Abdul Kadir

Co-Supervisor:

Dr Norhayati Mohd Noor

Dr Norwati Daud

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.

Patients and Methods: A randomized 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 randomized into two groups and the outcomes were analyzed using SPSS version 18.

Results: A total of 66 respondents were involved and no significant different 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 different 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 premarital 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.

Methodology: 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 premarital 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

Associate 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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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.

Patients and Methods: This is randomized control trial based on two arm parallel study. A total of 64 perimenopausal women age 45–55 year old were randomized 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

Co-Researcher:

Puan Intan Idiana Hassan

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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MMed (Internal Medicine)

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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 University 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

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 premonitory 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.

Patients and 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:

Associate Professor Dato' Dr Zurkurnai Yusof

Co-Supervisor:

Dr Ng Seng Loong

**A PROSPECTIVE MULTI-CENTER SINGLE
BLINDED RANDOMIZED 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, bacteriostasis, 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.

Patients and 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 duoDERM extrathin group ($P = 0.007$). The Chitosan film group showed less exudate ($P = 0.036$) and less odor ($P = 0.024$) compared 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.

Method: 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:

Mdm.(Dr) Normala Bte. Hj. Basiron

THE RELATIONSHIP BETWEEN DURATION OF UNTREATED PSYCHOSIS AND PSYCHOLOGICAL MORBIDITY AMONG CAREGIVERS OF NEWLY DIAGNOSED PATIENTS WITH SCHIZOPHRENIA RECEIVING PSYCHIATRIC SERVICES IN NORTHERN KEDAH

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MMed (Psychiatry)

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Objectives: The aim of this study is to determine the relationship between duration of untreated psychosis of newly diagnosed schizophrenia patients and psychological morbidities of caregivers and at the same time, to determine the frequency of psychological morbidity among caregivers of schizophrenia patients.

Methods: The sample derived from 60 caregivers of the newly diagnosed schizophrenia patients from Hospital Sultanah Bahiyah and 5 other participating district hospitals have been chosen to be samples in the study. They were screened using DASS Malay Version and SKMM together with a demographic questionnaire. They were the caregivers who came to the clinics from 2 October 2013 till 5 January 2014. The analysis is done using Cox Proportional Hazard Statistic and Multiple Linear Regression using SPSS version 20.0

Results: The frequency of possible psychological morbidity among caregivers is as high as 85% based on DASS screening and as low as 50% if we based on SKMM findings. According to DASS findings, more than half of the respondents have combination of different psychological problems. From multiple logistic regressions, we found out that there are 4 caregiver factors that might influence the development of psychological morbidity namely age, marital status, gender and perceive help from others. History of recent violence also increased the frequency of psychological morbidity. It seems that the longer the duration of untreated psychosis, the less likely the caregiver will suffer from psychological morbidity.

Conclusions: Psychological morbidity among caregivers was inversely related to duration of untreated psychosis in newly diagnosed schizophrenia patient. The longer the patient is left untreated, the lesser the frequency of the caregiver developing psychological morbidity unless there is history of recent violence which may increase the possibility of developing psychological morbidity.

Supervisor:

Dr Zarina Zainan Abidin

Co-Supervisor:

Dato' Dr. Ahmad Rasidi M Saring

Dr Asrene Ab Razak

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

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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.

Participants and 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 Drahman

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

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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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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.

Patients and 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:
Associate Professor Dr Mohd Ezane Aziz
Co-Supervisor:
Dato' Dr Hj 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 and materials: 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; (R²=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 localization and also monitoring of response.

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

DIFFERENTIATING LOW-GRADE AND HIGH-GRADE GLIOMAS USING MAGNETIC RESONANCE IMAGING SCORES

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Background: Brain tumour causes significant functional impairment and may be life threatening. Glioma is the most common primary brain tumour. They are classified according to their histological appearance into low grade and high grade. Low grade gliomas consist of World Health Organization (WHO) grade I and II gliomas. They are slow growing, less aggressive, associated with mild clinical symptoms, have better prognosis and can be treated conservatively or only with surgical excision. High grade gliomas include WHO grade III and IV gliomas. They are fast growing, aggressive, associated with uncontrolled seizures, raised intracranial pressure and neurological deficits. They are difficult to be completely excised, associated with high rate of recurrence and poor prognosis. Radiotherapy is routinely given post operatively. They are not chemosensitive. Limited chemotherapy is clinically proven to be effective. Despite the advancement in current modern medicine, the survival rate of patients with high grade glioma does not improve much over past decades.

Due to the different management and prognosis between low grade and high grade gliomas, it is crucial to accurately differentiate them. Currently, histopathological examination is the only gold standard. This requires open biopsy or stereotactic biopsy. Due to inherent tumoural tissue inhomogeneity, sampling error is a possibility with needle biopsy or incomplete excision. Furthermore, surgery and anaesthesia are not without risk. Therefore, it is crucial to have non invasive means for tumour grading.

Superior soft tissue contrast, multiplanar acquisition and free from radiation hazard make MR imaging a suitable tool for non-invasive tumour grading.

Objective: To evaluate conventional MRI features that may aid in differentiating low grade and high grade gliomas in Hospital Universiti Sains Malaysia (HUSM).

Methods and Methodology: We included 22 patients with cerebral gliomas that were confirmed by histopathological examinations. Among them, 11 have low grade gliomas and 11 have high grade gliomas. Their MRI brain examinations were traced from local Picture Archiving Communication System (PACS). The images were reviewed by two radiologists blinded of the histopathological results, CT scan images and history. A score is given to the tumours based on predetermined criteria. The scores obtained from both radiologists were averaged out. The average scores for each criterion were compared between low grade and high grade gliomas. Data entry and analysis were performed using Statistical Package for Social Sciences PASW(R) Statistics [SPSS] 20.

Results: There is statistically significant difference for the scores of tumour necrosis ($P=0.044$) and contrast enhancement ($P=0.006$) between low grade and high grade gliomas.

There is no significant difference for the scores of mass effect ($P=0.788$), tumour crossing midline ($P=0.400$), intratumoural haemorrhage ($P=0.263$), peritumoural oedema ($P=0.787$), tumour border definition ($P=0.305$), tumour signal heterogeneity ($P=0.378$), and volume of contrast enhancement ($P=0.324$) between low grade and high grade gliomas.

Conclusion: MRI is a useful non-invasive tool for differentiating between low grade and high grade gliomas. The conventional MRI features that are reliable to differentiate between low grade and high grade gliomas are tumour necrosis and intensity of tumour contrast enhancement. However, these information should not be interpreted alone. A comprehensive tumour grading should incorporate patient's age, risk factors, clinical presentation, conventional MRI findings and histopathological examination results. Advance MRI imaging should be utilized to provide more comprehensive assessment of the tumour if available. It demands more time for image acquisition and interpretation.

Supervisor:

Dr Win Mar @ Salmah Jalaluddin

Co-Supervisor:

Dr Ahmad Helmy Abdul Karim

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

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MMed (Radiology)

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Kerian, Kelantan, Malaysia

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 utilized. 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.

Rationale of the study: To assess performance, interobserver and intraobserver variability of our radiologists and fourth year radiology residents, in using our workstation to read soft copy mammograms. From there, hopefully we could come out with possible ways to improve each of those. The interobserver variability is a crucial limiting factor in reducing efficacy of radiologists in picking up breast cancer from benign breast lesions. Every effort should be made to assess its extent in each practice and then reduce it. In this study by using Kodak Carestream PACS Dedicated Mammography Workstation and double reading practice in the radiology department of Hospital Universiti Sains Malaysia, a teaching hospital in east coast of Malaysia, 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 and Materials: 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 categorize the findings. Agreements were analyzed 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 characterization 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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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.

Patients and 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 Kareem

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.

Patients and 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 cm \pm 0.09 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 Hjh Salwah Bt Hj Hashim

MR VOLUMETRY OF INTRACRANIAL AND BRAIN VOLUME IN NORMAL ADULT POPULATION AGED 40 YEARS OLD AND ABOVE

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MMed (Radiology)

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Introduction: Magnetic Resonance Imaging (MRI) has significantly accelerated many studies involving the brain with more researchers looking into not only anatomy and structural aspects of the brain, but also functional aspect due to excellent soft tissue discrimination (Kennedy et al., 2003). MRI also enables researchers to study the changes involving intracranial volume, brain volume and compartmental volumes, giving valuable data regarding the normal human brain morphological changes and in certain degenerative diseases or psychiatric illnesses (Ohnishi et al., 2001; Peters, 2006). Total intracranial volume and brain volume can be obtained from MRI. In general intracranial volume can be measured manually from T1-weighted images. This study aimed to study the intracranial volume, brain volume and intracranial volume to brain volume ratio in the normal healthy subjects. Data obtained can later be used in predicting degenerative changes in patients with Alzheimer's disease or patients with psychiatric illnesses such as schizophrenia and bipolar disorder.

Objectives: To determine the intracranial volume and brain volume in normal healthy adult Malay aged 40 years old and above.

Materials and Methods: This was a cross sectional study involving 58 subjects who underwent MRI under previous research. The age of the subjects ranged from 41 to 77 years old. MRI was performed using Signa Horizon LX 1.0 Tesla scanner by General Electric. MRI images were obtained in T1 sagittal and axial sections with 5mm thickness with 2 mm gap. Intracranial and brain volumes were measured using manually traced alternate slice volumetry method. The mean (SD) of total intracranial volume and total brain volume were calculated and analysed using IBM SPSS version 20.

Results: Mean (SD) of intracranial volume was 1397.06 cm³ (132.51 cm³) for all subjects. The mean intracranial volume for male subjects was 1496.12 cm³ (100.08 cm³) and female subjects was 1310.79 cm³ (90.34 cm³). The mean brain volume for all subjects was 1245.29 cm³ (125.34 cm³). The mean brain volume for the male subjects was 1338.05 cm³

(91.96 cm³) and female subjects was 1164.49 cm³ (89.61 cm³). Mean brain to intracranial volume ratio for all subjects were 0.8911 (0.0245). Mean brain to intracranial volume ratio for male subjects was 0.8946 (0.0276) and female subjects was 0.8881 (0.0214). There was no significant difference of mean intracranial volume, mean brain volume and intracranial volume to brain volume ratio between male and female subjects. There was significant correlation between brain to intracranial volume ratio with age. Significant correlation was seen between mean intracranial volume with age and sex, and mean brain volume with sex.

Conclusion: We have obtained a normative data for estimation and predicting future degenerative events in Malay population. The results gathered would be most beneficial for those patients who are experiencing mild cognitive impairment or newly diagnosed neuropsychiatric disorders such as Alzheimer's disease or schizophrenia. Limitations such as small sample size within single ethnicity, manual tracing method with 1 Tesla MRI machines would however limit the usage of this data.

Supervisor;

Associate Professor Dr Mohd. Shafie Abdullah

Co-Supervisor:

Dr Win Mar@Salmah Jalaluddin

STUDY OF FEASIBILITY OF LAPAROSCOPIC INGUINAL HERNIA SURGERY IN TAIPING HOSPITAL

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MMed (Surgery)

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Introduction: The history of inguinal hernia repair (IHR) has gone through many stages of development from the ancient era until today. Inguinal hernia repair is one of the commonest surgical procedure worldwide, irrespective of socioeconomic status or country. Today, with the advancement of laparoscopic surgeries, inguinal hernia has been listed as one of the preferred surgical condition repaired by laparoscopic approach. Nowadays, despite its known complications, advantages and disadvantages, Laparoscopic Inguinal Hernia Repair (LIHR) is widely accepted as the better option of treatment as compared to open approach of inguinal hernia repair (IHR).

Background: The purposes of this study is to look for the feasibility of Laparoscopy Inguinal Hernia Repair (LIHR) by Transabdominal preperitoneal (TAPP) done in Hospital Taiping. It is al to evaluate the outcome of the procedure and to look for recurrent. The aim is to improve the services available and to formulate a protocol looking into an opportunity of doing this surgery as a day care basis in future.

Methods and Results: Surgical Department in Hospital Taiping has been offering Laparoscopic Inguinal Hernia Repair since 2004. It was started by a single surgeon, followed by other newcomers with different learning curve. A

total of 105 patients have been studied from January 2009 to March 2010. Data related to this study is recorded in Performa and analyze upon completing the time phrame. The male leading the female with a ratio of 16.5:1 and Malays are the majority getting this procedure done with 71 candidates. 59 patients have indirect hernia, 22 patients have direct hernia, 19 patients have both direct and indirect hernia and 5 patients have recurrent hernia. There are 40 cases of right sided hernia, 45 cases of left sided hernia and 20 cases of bilateral inguinal hernia. Majority of the patients seek for treatment after 1 to 3 years of symptoms. All has undergone this elective procedure under general anesthesia. 76 patients are in ASAII with the remaining of ASA I. 79% of the patients were operated within one to two hours with 74.3% of postoperative ward stay of between two to three days. There were 2 cases of recurrent, which both were indirect type preoperatively. There were 20 cases of wound infection noted during the early review. However, all are managed conservatively and well on the subsequent review. Out of 53 patient documented as working, only 10 patients required medical certificate longer than one week and 52.4% of them took analgesia for less than 48 hours.

Conclusion: In summary, the commonest complication of LIHR were wound infection and recurrent. Early recurrent reflect the learning curve. However, analgesia requirement, length of ward stay, prolongation of medical certificate and absence of other postoperative complications were significant (P -value < 0.05) indicating that LIHR is feasible in Taiping Hospital.

PREOPERATIVE MECHANICAL BOWEL PREPARATION FOR ELECTIVE COLORECTAL RESECTION: IS IT NECESSARY?

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MMed (General Surgery)

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Introduction: Preoperative 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.

Patients and 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 analyzed 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, extra abdominal

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: Preoperative 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 EFFECTS OF STANDARDISED ORTHOSIPHON STAMINUES (MISAI KUCHING) PLANT WATER EXTRACT AS A CHEMOLYTIC AGENTS IN UROLITHIASIS AN INVITRO STUDY

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MMed (General Surgery)

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Background: Urolithiasis is a common disease present since ancient time. It is the third cause of renal disease with the incidence of 1 person in 11 in adults population in United State of America with high recurrent rate post treatment (Charles et al. 2012). Even though there are tremendous improvement in the field of urology especially pertaining to endourological treatment modalities resulting in only a small percentage of patients being offered open surgery, nevertheless medical therapy still has a role in the management of certain types of stone where by Traditional plants are commonly used as an alternative or complementary form of therapy. In this study an in vitro experiment was done on Orthosiphon stamineus (Misai Kuching) extract to assess its effectiveness as a chemolytic agent under different concentrations at acidic, neutral and alkaline solution, on calcium oxalate, Uric acid and Combination stones. Stone sample were collected from patient who underwent stone extraction either by open surgery or endourology. Three types of stones (calcium oxalate, uric acid and combination) was identified using Fourier infra red spectrometer. They were immersed in water extract of Orthosiphon stamineus. At three different Concentrations of 4mg/ml, 2mg/ml and 1mg/ml under pH5, 7 and 8 with potassium citrate and Hartman solution serve as experimental control.

The study was conducted for 8 weeks period, with weekly measurement of weight reduction. The stones were immersed in a sterile container with the test solutions and control. The test solutions were changed daily at 6ml/100mg per stone

under constant temperature of 37°C, using organ bath. At the end of the study the percentage weight reduction of each Stone were determined using the formula below:

$\% \text{ stone weight lost} = \frac{\text{initial weight} - \text{final weight}}{\text{initial weight}} \times 100$

The Mean weight reduction of each type of stone were determined. Chemolytic agent potassium citrate was used to compare its activity with the test solutions. Hartman solution was used as a negative control.

The percentage reduction in stone weight was determined and data were analyzed using Kruskal-Wallis test followed by Mann-Whitney U test to identify differences between groups.

At the end of 8 weeks, the percentage reduction of calcium oxalate stone was 68% in 4mg/ml, 41% in 2mg/ml, 63% in 1mg/ml, 30% in Hartman and 41% in potassium citrate. The uric acid showed percentage weight reduction of 47% in 4mg/ml, 23% in 2mg/ml, 44% in both 1mg/ml, and Hartman solution and 54% in potassium citrate. The results in the combination stones showed percentage weight reduction of 42% in 4mg/ml, 16% in 2mg/ml, 14% in 1mg/ml, 37% in Hartman solution and 52% in potassium citrate. However the results showed no significant difference when subjected to Kruskal Wallis test ($P > 0.05$).

The effects on pH change showed 69% percentage weight reduction in pH5, 52% in pH7 and 29% in pH8 in calcium oxalate stone. While the uric acid stone showed a weight reduction of 47% in pH5, 11% in pH7 and 14% in pH8, again with no statistically significant difference. However The combination stone with weight reduction of 42% in pH5, 63% in pH7 and 82% in pH8 showed statistical difference of 0.027 $P < 0.05$.

Conclusion: Hence we are able to show that Orthosiphon stamineus extract do have some dissolving capability of urinary stones in vitro studies.

Supervisor:

Dr Mohd Nor Gohar Rahman

Co-Supervisor:

Professor Siti Amrah Suleiman

Dr Azhar Amir Hamza

COMPARATIVE STUDY OF PRESERVATION VERSUS ELECTIVE ILIOINGUINAL NERVE NEURECTOMY IN OPEN MESH HERNIA REPAIR IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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MMed (Surgery)

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Background: Open inguinal hernia repair is a common procedure performed worldwide. It is a standard surgical procedure in Hospital Universiti Sains Malaysia. A Prospective study comparing open mesh hernia repair with ilioinguinal neurectomy and nerve preservation was not done before in Malaysia.

Objectives: To determine the value of ilioinguinal neurectomy in controlling pain, numbness and sensory loss three months after elective open mesh hernia repair (Lichtenstein hernia repair) in HUSM.

Design: Randomized controlled trial.

Results: This study was conducted in Hospital Universiti Sains Malaysia from April 2012 till April 2013. Total of 124 patients were randomized in the study. Among them 62 patients underwent Open mesh hernia repair with ilioinguinal neurectomy (Group A), and 62 patients underwent open mesh hernia repair with ilioinguinal nerve preservation (Group B). Out of 124 patients, only 113 patients came for follow up visit to SOPD. 56 patients in Group A and 57 patients in Group B. In the study all patients were male. The incidence of chronic groin pain 3 months significantly lower in group A than group B (7.1% vs 71.9%; $P < 0.001$). No significant differences were found regarding the incidence of groin numbness, postoperative sensory loss after three months ($P = 0.323$).

Conclusion: The results of this prospective comparative study disproved the concept that open mesh hernia repair with ilioinguinal neurectomy will increase the morbidities to the patient. Prophylactic ilioinguinal neurectomy decreases the incidence of chronic groin pain. No significant intergroup difference were found between the two groups regarding incidence of groin numbness and sensory loss. Thus it should be considered as routine surgical step during operation.

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

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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 protect 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.

Methodology: This is randomized 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 randomized 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 randomized 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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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 two weeks. The control group received only olive oil vehicle via oral route for two 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

AUTHENTICITY OF THE STANDARDIZED PATIENTS USED IN COMMUNICATION SKILLS ASSESSMENT

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MSc (Medical Education)

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Authenticity of the standardized patient's role-play is important to ensure students encounter with real experience. This is for them to gain a more meaningful and effective learning. This study was conducted to evaluate the authenticity of standardized patients (SPs) used in the communication skills assessment and to determine the strengths and weaknesses of the standardized patients in several key aspects of authenticity. A cross-sectional study was conducted, the performance of six SPs participated in communication skills assessment were video recorded. 58 students from different phases of the medical programme reviewed the video and rated the SPs performance using a validated instrument. A total of 348 completed checklists were collected and analyzed. The findings showed that the group of SPs performance was positively authentic with an average general mark of 6.9 out

of 10. Weaknesses that were identified included in the aspect of challenging the student examinee, simulating the physical complaints realistically, appearance to fit the role and role playing the given role. There was no association between the SPs authenticity scores and the student assessors at different phases of the medical programme. The findings suggest a need for an additional focus on SPs recruitment, selection, and training strategies for further improvement of the authenticity of SPs performance.

Supervisor:

Dr Mohamad Najib Mat Pa

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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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.

Patients and 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 analyzed 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:

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FACTORS ASSOCIATED WITH SEVERITY OF KYPHOTIC DEFORMITY AMONG SPINAL TUBERCULOSIS PATIENTS

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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.

Supervisor:

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Co-Supervisor:

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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.

Patients and 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.

Supervisor:

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Co-Supervisor:

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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:

Professor Dr Syed Hatim Noor

Co-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.

Methodology: 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.

Supervisor:

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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.

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

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