Abstracts

Abstracts of Theses Approved for the M.Sc., M.Med. and Phd. Degrees at the School of Medical Sciences, University Sains Malaysia, Health Campus, Kubang Kerian, Kelantan, Malaysia.

COST-EFFECTIVENESS ANALYSIS OF TYPE 2 DIABETES MANAGEMENT AT PRIMARY CARE IN MACHANG, KELANTAN.

Dr. Rohana binti Daud
MMed Community Medicine (Health System Management)

**Department of Community Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.**

Introduction & Objectives : A cost-effectiveness analysis was conducted alongside cross-sectional study at two government health clinics in Machang district of Kelantan, one with Family Medicine Specialist (FMS) and the other without FMS with an aim to determine and compare the cost-effectiveness of type 2 diabetes management at the above clinics.

Patients & Methods : One hundred and forty five (145) Malay type 2 diabetics who were on follow-up at KK Labok (health clinic with FMS) and 155 Malay type diabetics at Klinik Kesihatan Bandar Machang (health clinic without FMS) from August 2005 to May 2006 were selected for the study. Cost analysis was conducted from both patient and provider perspectives. The main outcome measurement was the proportion of good glycaemic control (HbAlc<7%). Cost-effectiveness ratio (CER) was calculated as cost per proportion of good glycaemic control for each study group. Data were collected by using an economic evaluation form, reviewing medical record and laboratory investigation for HbA1c analysis. Annual mean cost for a patient, provider and total cost were described per diabetic patient visit per year.

Results : Annual mean patient cost was not significantly different between health clinic with FMS [212.60(550.420)1 and health clinic without FMS [249.00(496.690)] (*p-value* 0.547). The annual mean provider cost was RM 1127.90(906.088) in health clinic with FMS and RM 802.15(626.266) in other health clinic which were significantly different (p-value <0.001). Similarly annual mean total cost was RM 1340.54(1091.019) and RM 105 1.20(741.936) for the FMS and without FMS respectively, showing significant difference (p-value 0.007). Proportion of good glycaemic control was 17.2% in health clinic with FMS and 10.3% for non FMS clinic.

Discussion : However, this was not significantly different with p-value of 0.081. Even though the CER for provider cost was not much different statistically between the two study groups (p-value 0.063), but the provider cost CER in health clinic with FMS was lower compared to primary care without FMS, i.e. 6557.65(5267.975) versus 7787.88(6080.26)).

Conclusion : The presence of FMS in health clinic will improve the management of type 2 diabetes effectively. However, this result must be interpreted cautiously as the provider cost-effectiveness ratio for both health clinics was inconclusive.

**Dr. Wan Norlida Wan Ibrahim : Supervisor
Dr. Nor Azwany Yaacob : Co-Supervisor**

INSULIN RESISTANCE IN NON-OBESE NORMOGLYCAEMIC MALAY SUBJECTS: EFFECTS OF THERAPEUTIC LIFESTYLE CHANGES AND SIMVASTATIN

Dr. Abu Kholdun Al-Mahmood
MMed Community Medicine (Health System Management)

**Department of Community Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.**

Introduction : Hyperlipidaemia and insulin resistance were reported to have positive relationship. Most of the previous studies on insulin resistance were performed on hyperlipidaemic subjects who were also obese. So influence of obesity and hyperlipidaemia could have acted simultaneously in the genesis of insulin resistance. It is therefore important to look into the abnormality in a group of hyperlipidaemic subjects who are free from other confounders of insulin resistance.

Objectives : The present study was designed to determine insulin sensitivity and secretory status of non-obese normoglycaemic subjects, and to find out the relationship between hyperlipidaemia and insulin sensitivity in a non-obese population. In addition, the second phase of this study looked at the effects of lipid lowering interventions on insulin sensitivity in hyperlipidaemic subjects.

Patients & Methods : A cross sectional study involving 246 non-obese (BMI<25 kg/m^2)waist circumference male<l02cm, female <88cm) and non-diabetic subjects aged between 30-60 years was carried out. The subjects underwent OGTT, LFT and RFT to exclude type 2 diabetes, IGT, IFG, renal and liver diseases. Fasting plasma glucose, fasting insulin and lipid profile were measured. Insulin sensitivity and secretory status were computed using the homeostasis model assessment (HOMA) software to obtain HOMA%S, HOMA%B and HOMA-IR. The subjects were divided into two groups according to their lipid status and their insulin sensitivity was compared between the two groups. Two groups of 28 non-obese hyperlipidaemic and 28 normolipidaemic subjects participated in the intervention study. They underwent 3 months of therapeutic lifestyle changes (TLC) regimen after which they were again divided into TLC and Simvastatin groups and for the subsequent three months went through either TLC only or TLC plus Simvastatin. Finally their insulin sensitivity and lipid status were assessed again.

Results : The hyperlipidaemic subjects showed substantially lower insulin sensitivity and higher insulin resistance in comparison to normolipidaemic subjects. The adjusted mean of HOMA%S of hyperlipidaemic and normolipidaemic subjects were 80 and 155 (p<O.0001) respectively. Insulin secretory status as expressed by the mean of HOMA%B was 178 and 116 for hyperlipidaemic and normolipidaemic subjects respectively. It indicated that the B cells of hyperlipidaemic subjects hade to secrete more insulin to overcome the lowered insulin sensitivity. Intervention by both TLC and Simvastatin showed significant reduction of insulin resistance (62.3% improvement of HOMA-IR in TLC group and 51.44% in Simvastatin and TLC group) and improvement of insulin sensitivity (142% improvement of HOMA%S in TLC group and 122% in Simvastatin and TLC group) in

hyperlipidaemic subjects with reduction of lipid levels.

Conclusion : It can thus be concluded that, insulin sensitivity of otherwise healthy non-obese hyperlipidaemic subjects is lower than normolipidaemic subjects. The B cells of hyperlipidaemic subjects have to work more to compensate for the lowered insulin sensitivity. Insulin sensitivity of hyperlipidaemic subjects may be improved by lowering lipid levels.

Assoc. Prof. Aziz Al-Safi : Supervisor
Dr. Faridah Abdul Rashid : Co-Supervisor

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CARDIAC REHABILITATION PROGRAMME AND IT'S EFFECT ON QUALITY OF LIFE OF MYOCARDIAL INFARCTION PATIENTS AT HOSPITAL UNIVERSITI SAINS MALAYSIA, KELANTAN.

Zakira bt Mamat
MMed (Community Medicine)

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

Objectives : This cohort study was done to determine the quality of life of myocardial infarction patients at Hospital Universiti Sains Malaysia (HUSM) before and after undergoing three months of cardiac rehabilitation.

Patients & Methods : Eighty patients with myocardial infarction admitted to the Coronary Care Unit HUSM were selected using purposive sampling. Quality of life status were measured by interviewing patients, using both the generic Short Form 36 (SF36) and the disease specific Quality Of Live After Myocardial Infarction (QLMI) questionnaires before and after the cardiac rehabilitation programme. The pre and post scores of both SF 36 and QLMI were analysed for any change in the quality of life scores after three months of rehabilitation.

Results : The results showed that the quality of life of patients in general (SF36) before and after undergoing the cardiac rehabilitation programme were generally low, with a mean score of 78.8 before cardiac rehabilitation and 83.2 after cardiac rehabilitation, giving a difference of 4.41, which was statistically not significant (p= 0.24). The quality of life after myocardial infarction (QLMI) mean scores were higher at pre rehabilitation, (48.9) while the post rehabilitation mean score was 46.4, giving a negative difference of -2.49 (p=0.52).

Conclusion : It was concluded that the quality of life of myocardial infarction patients in HUSM after three months rehabilitation was still low and that the cardiac rehabilitation programme did not significantly improve their quality of life. The cardiac rehabilitation programme should be reviewed to furthur improve the quality of life of myocardial infarction patients in Hospital USM.

Prof. Dr. Zulkifli bin Ahmad : Supervisor
Prof. Rogayah Ja'afar : Co-Supervisor

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OVERWEIGHT, SMOKING AND SELF-ESTEEM AMONG ADOLESCENTS IN KOTA BHARU, KELANTAN

Dr. Norhayati Mohd Noor
MMed Community Medicine (Family Health)

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

Introduction : Overweight during adolescence has social, economic and psychological consequences and low self-esteem is the first detrimental effect observed. Overweight adolescents with low self-esteem are more likely to engage in high-risk behaviors such as smoking. Besides addiction, another possible explanation for the continuation of smoking by adolescents is the belief that it can help control body weight.

Objectives : The study is aimed to determine the prevalence of overweight and smoking; the association between Body Mass Index (BMI) and smoking; the association between self-esteem and smoking; and comparison of self-esteem between overweight and non-overweight among secondary school students in Kota Bharu, Kelantan.

Methodology : A cross-sectional study was conducted between January to June 2005 among 1364 randomly selected Form 2 and Form 4 students in 10 co-educational government secondary schools in Kota Bharu. Part 1 Questionnaire was a guided self-administered questionnaire which required responses from students on demographic data, overweight, smoking and self-esteem. Self-esteem was assessed using Malaysian version of Rosenberg SES. Part 2 Questionnaire required responses from either their parents or guardians on socio-economic status. BMI measurement was taken. Data was entered using SPSS 12.0 and analyzed using Stata 8.0. A survey data analysis was applied.

Results : The prevalence of overweight was 12.5% (95% CI: 10.4, 14.6) and the prevalence of smokers was 6.7% (95% CI: 3.8, 9.7). There was no association between BMI and smoking (P=0.806) after controlling for age, gender, family history of overweight, breakfast, snack, time spent on television and computer, and physical activity. No association found between Rosenberg SES score and smoking (P=0.593) after controlling for age, gender, BMI and school status. There was no difference in adjusted mean Rosenberg SES score between overweight and non-overweight (P=0.419) after controlling for age, gender, smoking and school status. The adjusted mean Rosenberg SES score of overweight was 0.32 lower than non-overweight.

Conclusion : The prevalence of overweight and smoking was 12.5% and 6.7% respectively. There was no association between BMI and smoking; no association between self-esteem and smoking; and no difference in self-esteem between overweight and non-overweight adolescents in Kota Bharu.

Prof. Dr. Zulkifli bin Ahmad : Supervisor
Dr. Rohana Abdul Jalil : Co-Supervisor
Dr. Mohd Jamil Yaacob : Co-Supervisor

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COST-EFFECTIVENESS ANALYSIS OF TYPE 2 DIABETES MANAGEMENT AT PRIMARY CARE IN MACHANG, KELANTAN

Dr. Rohana binti Daud
MMed Community Medicine (Health System Management)

Department of Community Medicine
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objectives : A cost-effectiveness analysis was conducted alongside cross-sectional study at two government health clinics in Machang district of Kelantan, one with Family Medicine Specialist (FMS) and the other without FMS with an aim to determine and compare the cost-effectiveness of type 2 diabetes management at the above clinics.

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Prof. Dr. Zulkifli bin Ahmad : Supervisor
Dr. Nor Azwany Yaacob : Co Supervisor
Dr. Mazlan Abdullah : Co Supervisor

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THE EFFECT OF SECONDHAND SMOKE EXPOSURE DURING PREGNANCY ON NEWBORN BIRTH WEIGHT AMONG POST-PARTUM MALAY WOMEN IN HOSPITAL MELAKA

Dr. Salinah binti Omar
MMed Community Medicine (Environmental Health)

Department of Family Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Many studies had shown an association between secondhand smoke exposure and pregnancy outcomes particularly newborn birth weight. However, many of these studies were conducted in developed countries. Since developing countries including Malaysia have higher prevalence of smoking and poorer environmental condition, the health effect of secondhand smoke exposure may be more pronounced.

Objectives : The objectives of this retrospective cohort study were to determine the effect of secondhand smoke exposure during pregnancy on birth weight and risk of low birth weight (LBW), and to assess the knowledge of women on the health effects of smoking and secondhand smoke exposure. The exposure of secondhand smoke was defined as husband or others who live together and smoke inside house with the presence of subjects.

Patients & Methods : Selection of subjects was performed among Malay women who gave birth in Hospital Melaka between April 2006 to June 2006. The inclusion criteria were women with singleton baby and without congenital anomaly. Women with chronic medical conditions, smoke or drink alcohol and unavailability of antenatal cards were excluded.

Results : There were 209 in the exposed group while 211 women in the non-exposed group. The exposed women were younger in age, had lower education and household income compared to non-exposed women. The mean birth weight of exposed and non exposed women were 2945.5 (SD 428.85) and 3139.7 grams (SD 402.86) respectively.

The different of mean birth weight was 153.1 grams (95%Cl: 80.60, 225.55) after controlling significant maternal factors. There was also an inverse dose response relationship with a decrement of 12.9 grams (95% Cl: 7.01, 18.96) of birth weight following an exposure to average of one cigarette per day during pregnancy. The incidence of LBW was 10% in women with secondhand smoke exposure and 4.7% in women without secondhand smoke exposure (Crude *RR*: 2.12, 95%Cl: 1.02, 4.39). After controlling for significant associated maternal factors which were gestational duration, maternal height, previous history of LBW and parity status, secondhand smoke exposure was not significantly associated with LBW (RR:1 .37, 95%Cl: 0.51. 3.65). There was no significant different in mean knowledge score between exposed and non-exposed women.

Conclusions : Women of both exposed and non-exposed in this study were much aware on the effect of active p smoking but low in knowledge on the effect of secondhand smoke exposure. In conclusion, there is a significant decrement of birth weight following secondhand smoke exposure during pregnancy Pregnant women should avoid this exposure particularly those already at higher risk of poorer pregnancy outcomes.

Dr. Norsa'adah binti Bachok : Supervisor
Dr. Zaliha binti Ismail : Co-Supervisor

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PREVALENCE AND FACTORS ASSOCIATED WITH SHORT BIRTH SPACING AMONG MALAY WOMEN WHO DELIVERED AT HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM), KOTA BHARU, KELANTAN

Dr. Tengku Alina bt Tengku Ismail
MMed Community Medicine (Family Health)

Department of Family Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Short birth spacing has negative effects on the mother, child and the family both in term of health and socio-economic aspects. Worldwide, many births occur after a short interval.

Objectives : The aim of this study is to determine the prevalence and associated factors for short birth spacing among Malay women who delivered at Hospital Universiti Sains Malaysia (HUSM).

Patients & Methods : A cross-sectional study was conducted on 355 Malay women who were admitted at Ward 2 Topaz (postnatal ward), HUSM from 1 June to 3O November 2005. Systematic random sampling was applied and consented respondents were interviewed using a validated questionnaire, as well as self-administered questionnaire to their husbands. The questionnaire consists of socio-demographic data, obstetric data, knowledge and attitude on family planning. The study adopts the definition of short birth spacing to mean a birth spacing of less than 24 months as used by World Health Organization (WHO) and the Ministry of Health, Malaysia.

Results : The mean age of the women was 33.5 (SD 5.0) years old. The median duration of birth spacing was 26 (IQR 28) months. The prevalence of short birth spacing was 45.1% (95%CI: 40.4, 49.8). Majority of the women (53.5%) and husbands (57.7%) had poor knowledge score on family planning. Regarding attitude towards family planning, 69.0% of the women and 74.9% of the husbands had unsatisfactory attitude towards family planning. The significant associated factors for short birth spacing were women's age, parity, breastfeeding duration, history of contraception and history of abortion between second last and the last delivery. Women with higher parity (OR=1 .46, 95%CI=1 .22, 1.76), those who breastfed their second last baby for less than one year duration (OR=6. 18, 95%CI=3 .59, 10.62) and those not using contraception between the second last and the last delivery (OR=3.95, 95%CI=2.21, 7.05) were more likely to have short birth spacing. Increase in the women's age (OR=0.86, 95%CI=0.80,

0.92) and a history of abortion between the second last and the last delivery (OR=0.09, 95%CI=0.02, 0.34) were less likely to result in short birth spacing.

Conclusion : The prevalence of short birth spacing among Malay women who delivered at HUSM was high. Birth spacing should be given more priority in the health programmes at all levels and should focus more on the factors found to be significant in this study.

Dr. Mohd Hashim Mohd Hassan : Supervisor
Dr. Tengku Norbanee Tengku Hamzah : Co-Supervisor
Assoc. Prof. Dr. N. Mohd. Zaki N. Mahmood : Co-Supervisor

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THE DIRECT COST OF TREATING DIABETIC FOOT AND ITS ASSOCIATED FACTORS IN THE ORTHOPAEDIC WARDS, HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM), KOTA BHARU KELANTAN

Dr. Zawiyah Dollah
MMed Community Medicine (Health System Management)

Department of O & G,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia

Introduction : Diabetic foot is one of the devastating complications of diabetes mellitus. The cost of treating it is increasing as its prevalence is increased. Therefore, the aim of this study was to estimate the direct cost incurred by health care provider in treating diabetic foot and its associated factors in the Orthopaedic Wards, Hospital Universiti Sains Malaysia (HUSM), Kota Bharu, Kelantan.

Patients & Methods : A cost of illness study was done prospectively whereby 101 diabetic foot patients who were admitted to the Orthopaedic wards 4 Utara and 4 Selatan, HUSM from 1 May to 3 December 2005 were purposely selected. The subjects underwent face-to-face interview and their medical records were reviewed. The macrocosting and microcosting were performed on each of the patient. The cost of treating diabetic foot was divided into capital and recurrent costs. The mean cost per patient per admission was calculated. Multiple linear regression analysis was used in determining the socio-demographic and clinical characteristic factors associated with the cost.

Results : Majority of the subjects were Malay (97.1%) and the others were Chinese. Female (5 1.5%) was predominant than male (48.5%). The mean (SD) age (years) of the subjects, duration of having diabetes (years) and length of hospitalization (days) was 56.2(9.78). 10.7(6.41) and13.2 (4.68), respectively. The mean (SD) direct cost per patient per admission was Ringgit Malaysia (PJ 11,763.88(6,843.96). The mean (SD) for capital and recurrent cost was RM 53.51(32.83) and RM1 1,710.37 (6,813.24) respectively. Amputation, debridement, fever at presentation, presence of hypertension and attendance of split skin grafting were significantly associated with the cost by multiple linear regression analysis.

Conclusion : The mean direct cost per patient per admission of treating diabetic foot was RM 11,763.88, which mostly contributed by recurrent cost and was associated with the presence of hypertension as co-morbidity, patient who presented with fever and surgical procedure performed which was split skin grafting, amputation or debridement. Hence, strategies in preventing the lesion and its severity need to be strengthened and improvement in the management of diabetes mellitus and its chronic complications can reduce the length of hospitalization and its economic burden.

Dr. Than Winn : Supervisor
Dr. Wan Norlida Ibrahim : Co-Supervisor
Dr. Ahmad Sallehuddin Yaacob : Co-Supervisor

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PREVALENCE AND ASSOCIATED FACTORS OF

DEPRESSION, ANXIETY & STRESS AMONG SECONDARY SCHOOL TEACHERS IN KOTA BHARU, KELANTAN

Dr. Azlihanis Abdul Hadi
MMed Community Medicine (Health System Management)

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

Introduction : The teaching profession is categorized as an occupation that has a high impact on emotional health such as depression, anxiety and stress. This research aims to study the prevalence of depression, anxiety and stress and the associated factors contributing to teachers' depression, anxiety and stress level.

Patients & Methods : A cross-sectional study was conducted on 580 secondary school teachers in Kota Bharu district. The instrument was adopted from the Depression, Anxiety and Stress Scale (DASS 21) by Lovibond and Lovibond (1995) and Job Content Questionnaire by Karasek and Theorell (1990) to fulfill the objectives of the study. The questionnaire consisted of two parts, Part I on non-job factors (socio demographic characteristics) and Part II on psychosocial job factors contributing to depression, anxiety and stress. The descriptive methods and multiple linear regressions were used to answer the objectives and hypothesis of the study. The significant level was set at a = 0.05.

Results : The study showed that the prevalence of depression was 49.1% (45.0, 53.2), anxiety (61.4%) (57.4, 65.3) and stress (34.0%) (30.1, 37.8). However, based on the level, most teachers experienced mild level of depression (21.0%), moderate level of anxiety (22.2%) and mild level of stress (17.4%). Multiple linear regression showed that decision latitude, psychological job demand and job insecurity were significantly associated with depression level; age, duration of work and job insecurity were significantly associated with anxiety level; and age, duration of work and psychological job demand were significantly associated with stress level.

Conclusion : This study indicated that job-related factors were not contributing much to depression, anxiety and stress among secondary school teachers. Hence, the non job-related factors should be emphasized to be studied for future research.

Prof. Dr. Syed Hatim Noor : Supervisor
Dr. Aziah Daud : Co-Supervisor
Prof. Rusli Nordin : Co-Supervisor

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THE USE OF HERBAL MEDICINES DURING PREGNANCY AND PERINATAL MORTALITY IN TUMPAT DISTRICT, KELANTAN

Dr. Azriani bt Ab. Rahman
MMed Master of Community Medicine (Family Health)

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

Introduction : The use of herbal medicines during pregnancy from other countries ranges from 7.0% to 55.0%. Although there was no reported study directly linking the use of herbal medicines during pregnancy and perinatal mortality, several studies revealed the adverse effects of herbal medicines to the fetus, which may lead to perinatal death. Currently, there is limited information regarding knowledge, attitudes and herbal medicines practice during pregnancy among Malaysian women as well as its association with perinatal mortality.

Objectives : The objectives of this study were to determine the prevalence of use and to describe the pattern of herbal medicines use

during pregnancy among women in Tumpat, to determine the association between knowledge on safety of herbal medicines, attitudes towards herbal medicines and the use of herbal medicines during pregnancy as well as to determine the association between the use of herbal medicines during pregnancy and perinatal mortality in Tumpat.

Patients & Methods : A case control study was carried out from June 2005 to December 2005 to determine the prevalence of use, to describe the pattern of herbal medicines use and to determine the association between the use of herbal medicines during pregnancy and perinatal mortality. Cases were women who gave birth from June 2002 to June 2005 and had perinatal mortality as birth outcomes. Controls were those who never had history of perinatal mortality. All eligible cases (106) were included in the study, while a simple random sampling method was used to select 210 mothers from 7204 eligible controls. All 316 respondents from the case control study were selected for a cross sectional study to determine the association between knowledge on safety of herbal medicines, attitudes towards herbal medicines and the use of herbal medicines during pregnancy. Statistical analysis was performed using SPSS version 12 and Stata version 8.

Results : There were 41 cases (38.7%) and 108 controls (5 1.4%) who used at least one type of herbal medicines during pregnancy. The estimated prevalence of women in Tumpat who used at least one type of herbal medicines during pregnancy was 51.2% (95% CI 44.6%, 57.8%). Coconut oil, unidentified 'Orang Asli' herbs, manjakani, ketam uri, kacip Fatimah and celaka were among the commonly used herbal medicines. The most common herbal medicines used by cases and controls was coconut oil (46.3% and 63.9% respectively). The most common indication for using herbal medicines during pregnancy among cases and controls was to facilitate labour (61.0% and 89.8% respectively). A large number of them used herbal medicines during the third trimester of pregnancy only (39.0% and 79.6% respectively). The majority of cases and controls who used herbal medicines during pregnancy believed that herbal medicines were effective to solve their health problems and fulfilled the indications for use (53.7% and 81.5% respectively). The older generation like parents and parents in law were the most common persons who suggested using herbal medicines (48.8% and 63.9% respectively). The majority of cases (53.7%) used herbal medicines at daily frequency. The majority of controls (56.5%) used them only once throughout the pregnancy. The majority of cases (68.3%) and controls (87.0%) used only one type of herbal medicine throughout the pregnancy. There was a negative association between knowledge on safety of herbal medicines and the use of herbal medicines during pregnancy (OR=0.92, 95% CI: 0.86; 0.99). Attitude towards herbal medicines was not significantly associated with the use of herbal medicines during pregnancy. There were negative associations between the use of unidentified 'Orang Asli' herbs and coconut oil during the third trimester of pregnancy and perinatal mortality in Tumpat (0R0. 10, 95% CI: 0.02; 0.59) and (OR=0.48, 95% CI: 0.25; 0.92) respectively, while the use of unidentified herbs prepared by traditional midwives and other types of herbal medicines during the first trimester of pregnancy were positively associated with perinatal mortality (OR=5.24, 95% CI: 1.13; 24.23) and (OR=8.90, 95% CI: 1.35; 58.53) respectively.

Conclusion : The use of herbal medicines during pregnancy among women in Tumpat is common. Higher knowledge on safety of herbal medicines had protected women from using herbal medicines during pregnancy. Therefore, the knowledge on safety of herbal medicines should be propagated to mothers through health education because the information may influence their decision making in using herbal medicines during pregnancy. Some herbal medicines are protective, while some of them are harmful to pregnancy. The use of unidentified 'Orang Asli' herbs and coconut oil during the third trimester of pregnancy were the protective factors from perinatal mortality, while the use of unidentified herbs prepared by traditional midwives and other types of herbal medicines during the first trimester of pregnancy were the risk factors for perinatal mortality. This finding should be confirmed by further studies including the pharmacological study to identify the pharmacological compound of these herbs and to evaluate the real effects of these herbal compounds to the fetus.

Prof. Zulkifli Ahmad : Supervisor
Assoc. Prof. Dr. Siti Amrah Sulaiman : Co-Supervisor

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NEUROBEHAVIOURAL EFFECTS OF INORGANIC LEAD EXPOSURE IN BATTERY WORKERS IN SELANGOR

Dr. Muhammad Nasir bin Sulaiman
MMed Community Medicine (Occupational Health)

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

Introduction : The usage of lead progressively increased with industrialisation and rose dramatically with the widespread use of automobile in the twentieth century. Nowadays, it is predominantly used in the lead-acid batteries with estimated 76% of annual primary and secondary lead usage. Human can be exposed to lead through the general environment and occupations but it is the latter that poses major concern because almost 95% of all adult lead intoxication is of occupational in origin (Shwartz, 2001) Among the organs affected by lead are of lead are cardiovascular, renal, reproduction, haematology, gastrointestinal, hepatic and central nervous system. Early effects of lead on the central nervous system can be subclinical and test of neurobehavioural is one method to detect these effects. Although battery manufacturing is the major user of lead, currently, there is very limited data available on the level of lead exposure and its neurobehavioural effects on battery workers in Malaysia.

Objectives : The objective of this study is to assess the neurobehavioural performances of battery manufacturing plant workers.

Methodology : This is a cross sectional comparative study comparing the neurobehavioural effects of lead among 44 exposed and 33 non-exposed from three battery manufacturing plants and one battery reclamation and recycling plant. Exposure was assessed through personal monitoring of exposure to lead at different sections of the plants; blood lead level was checked as a biomarker and symptoms and neurobahaviour outcome was assessed using standard WHO questionnaire and Neurobehavioural Core Test Battery respectively.

Results : Thirteen of twenty points of monitoring showed level above Permissible Exposure Limit (Range <1 $\mu g/m^3$ to 768.88 . $\mu g/m^3$). The sections (no.) with the level above the Permissible Exposure Limit were grid casting (2), grid pasting (2), quality control (3), assembly lines (2), battery cutting (1), furnace-melt (1), battery smelting (1) and housekeeping (1). Median blood lead levels for exposed and non-exposed workers were 11.10 and 9.45 $\mu g/dL$ respectively. Exposed workers were noted to have higher proportion of forgetfulness (29.5%), excessive sweating (13.6%), diarrhea (15.9%), weakness of lower body (25.0%) and change of sense of taste (9.1%) but none was significant. Sixty three percents of exposed workers wore face mask while working but only 6.8% change their cloth before going home. Only small proportion of exposed workers eat and smoke while working (4.5% and 13.6% respectively). Exposed workers scored lower in Benton Visual Retention, Digit Span, Pursuit Aiming, Digit Symbol, and Santa Ana Manual Dexterity Non-dominant Hand. Only Pursuit Aiming Test was significant (p=0.01 8). There were inverse associations in workers in the higher blood lead level category (≥12.2$\mu g/dL$) in the tests of Pursuit Aiming, Simple Reaction Time, Profile of Mood States (total score), Tension-Anxiety, Depression-Dejection and Vigour, in reference to workers in the category of lower blood lead level (but these associations were not significant.

Discussion : Different sections of different factories have different levels of enviroimlental lead from very low level to a very high level. Despite being exposed to high concentration of lead at certain sections, the blood lead levels of the workers are still below the action level. This is due to due to the protective measures practiced by the workers

and compliance to the law by the employer that protects the workers. Neurobehavioural symptoms and performance score were not significant between the exposed and non-exposed which was reflected by the insignificant difference in blood lead level between these two groups.

Conclusion : The workers in the studied battery manufacturing plants are exposed to lead at varying level depending on the sections in the factory. However, through proper protective measures, safe work practices and employers compliance to the law, the workers were protected from this exposure. There were also no significant inverse association between blood lead levels and neurobehavioural performances in battery manufacturing plant workers

Key word battery workers, blood lead level, neurobehavioural performance, environmental lead level

Prof. Dr. Rusli bin Nordin : Supervisor
Dr. Aziah Daud : Co-Supervisor
Dr. Tengku Mohd. Ariff : Co-Supervisor

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A STUDY ON THE USE OF CLINICAL PRACTICE GUIDELINES (CPG) ON MANAGEMENT OF TYPE 2 DIABETES MELLITUS IN KELANTAN

Dr. Nor Azlina Binti A. Rahman
MMed Community Medicine (Epidemiology and Biostatics)

Department of Community Medicine
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : The prevalence of diabetes is increasing in Malaysia. Majority of the patients were reported to have poor glycaemic control. CPG were developed to improve the practice of health care providers for better health outcomes in patients.

Objectives : The objective of this study was to determine the use of diabetic CPG among diabetes care team (DCT), to evaluate the effectiveness of intensive training on the CPG given to DCT in Kelantan on their knowledge, attitude and practice (KAP) and patients' KAP and diabetic control, and to determine the factors associated with HbA_{1c} levels in type 2 diabetic patients with poor control in Kelantan.

Methodology : This study was conducted iii all health centres (HC) in Kelantan from August 2005 till March 2006. Cross-sectional study design was used to determine the characteristics of DCT and their use of diabetic CPG, and the characteristics of type 2 diabetic patients with poor control and the factors associated with their HbA_{1c} levels. To determine the effect of intensive course on diabetic CPG given to DCT on their KAP and their patients' KAP and diabetic control, randomised Controlled trial was used where the participants were randomized into intervention and control group by cluster according to the districts in Kelantan. The participants were all DCT members and diabetic patients with poor control. Post-intervention data were collected four months after the intervention was completed.

Result : A total of 176 DCT members participated in this study. Most of the participants knew about the existence of diabetic CPG (79.5%) or have ever read it (71.6%). in term of the use of CPG, only 40.4% to 83.1% of them claimed always practice according to the diabetes care measured. The mean total knowledge scores were 23.6 marks (SD = 3.41) from the total score of 30 or 78.7%, and the median total attitude and practice scores were 29 (IQR 8) from the total score of 35 and 27 marks (IQR = 4) from the total score of 30 or 82.9% and 90%, respectively. A total of 208 diabetic patients with poor control participated in this study. Their mean total practice scores were 21.9 (SD 2.49) from the total score of 32 or 68.4%, and the median of total knowledge and attitude scores were 42 (IQR = 8) from the total score of 48 and 14 (IQR = 2) from the total score of 15 or 87.5% and 93.3%, respectively. Patients who were married, had no formal education and receiving their diabetic care in HC without Family Medicine Specialist

(FMS) were significantly associated with poorer HbA levels. Fasting blood glucose (FBG) levels were significantly increased with increasing levels of HbA. A total of 88 DCT participants in intervention and 55 in control group completed this study. in the intervention group, significant improvement was observed in knowledge scores as compared to control group. A total of 86 patient participants in each group completed this study. Their practice scores were significantly reduced more in intervention compared to control group. However the changes observed here were minimal. No significant changes were observed in all the other outcome variables measured in DCT or patient participants.

Conclusion : Majority of the DCT members in Kelantan knew about the existence of diabetic CPG. However, their use of the CPG was not very satisfactory. The KAP of DCT and patients were quite good but that did not translate into good diabetic control of the patients. Factors associated with HbA levels in the diabetic patients with poor control FBG, educational level, marital status and receiving care in HC with FMS. After intervention, significant improvement was only seen in the knowledge score of DCT, albeit minimal. One day intensive course may not be enough to change DCT's KAP and regularly structured continuing medical education (CME) might be needed to reinforce their KAP. Four months duration may not be enough for the DCT to properly manage their diabetic patients for observable changes in the patients' KAP and diabetic control measures.

Assoc. Prof. Dr. A. Aziz Al-Safi Ismail : Supervisor
Dr. Nor Azwany Yaacob : Co-Supervisor

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A STUDY OF SINGLE NUCLEOTIDE POLYMORPHISM AT NUCLEOTIDE 153, 104 AMONG MALAYSIAN CHILDREN WITH RETINOBLASTOMA AND THEIR PARENTS

Dr. Nor'Aini Binti Ramlee
MMed Medicine (Opthalmology)

Department of Opthalmology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : An A→G single nucleotide polymorphism (SNP) at nucleotide 153,104 in the retinoblastoma susceptibility gene was identified to be found exclusively in Asian population with higher frequency in Southeast Asian population as compared to South Asian population

Objectives : To determine the presence of A→G SNP at nucleotide 153,104 in our Malaysian children with retinoblastoma and their parents and its possible association with laterality and staging of the disease

Methodology : Children with retinoblastoma and their parents who fulfilled the inclusion criteria were included in this study. Ocular evaluations which include external ocular examination and binocular indirect ophthalmoscopy were done under general anesthesia for the selected patients. The staging was done according to International Classification of Retinoblastoma (ICRB). The control subjects comprised of ethnic-matched normal healthy individuals. Dilated fundus examination was performed on the parents and control subjects to rule out abnormal retinal finding. Three mls of blood were taken for genetic study. DNA extraction was done using Gene∨A1i Blood Mini kit. Primer pairs were designed to amplify exon 19 of RB 1 gene and its flanking intronic region by using. Primer3 software. The presence of the RB1 SNP at nucleotide 153,104 was detected by RFLP→PCR with the use of *Tsp* 5091 enzyme.

Result : Forty-four retinoblastoma patients were recruited in this study; 3 5(79.5%) were Malay, 5(11.4%) were Indian and 4(9.1%) were Chinese. The frequency of G variant among Malaysian retinoblastoma patients was found to be twice (0.14) higher as compared to the controls (0.07), however it was not statistically significant. G variant was found exclusively among Malay patients. There was also

no significant association between laterality (p=0.73) and severity of the disease (p=1.00) and the presence of G variant. Interestingly, there was significant association in the presence of polymorphism in the retinoblastoma patients with the fathers (p=0.01) but not with the mothers (p=0.40).

Conclusion : SNP at nucleotide 153,104 was found exclusively among Malay Malaysian children with retinoblastoma but there was no evidence of its role in susceptibility, laterality and prognosis of retinoblastoma. However, paternal SNP may play an important role in susceptibility of the disease. Thus, screening of the siblings may provide important understanding of the possible paternal transmission.

Dr. Liza Sharmini Ahmad Tajudin : Supervisor
Dr.Zilfalil Bin Alwi : Co-Supervisor
Dr. Wan Hazabah Bin Wan Hitam : Co-Supervisor

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A COMPARISON OF EFFICACY BETWEEN SWEEPING OF MEMBRANES AND NON SWEEPING OF MEMBRANES IN INDUCTION OF LABOUR.

Dr. Edawati Dahrawi Edrus
MMed (Obstetric And Gynaecology)

Department of Obstetric And Gynaecology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objectives : To determine whether cervical membranes sweeping (stripping) during induction of labour is beneficial and whether cervical membranes sweeping during induction of labour has association with increased peripartum complications.

Patients & Methods : This was a Prospective Randomised Controlled Trial, done for Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan. Women who were admitted to Obstetric wards in Hospital Universiti Sains Malaysia for formal induction of labour were randomized into 2 groups : Group 1 sweeping of membranes performed prior to induction of labour. Group 2 — sweeping of membranes not performed prior to induction of labour. Number of prostaglandin (PGE2) used for induction, interval of induction to onset of labour, duration of labour, maximum use of oxytocin, mode of delivery and peripartum complications were analysed.

Results : Membranes sweeping shorten labour interval (mean 9.42 hours ± 3.13 SD versus 15.14 hours ± 3.03 SD, p-value = 0.001), has shorter labour duration (mean 5.9 hours ± 2.76 SD versus 9.0 hours ± 1.99 SD, p-value = 0.001), lower used dosage of oxytocin (mean 11.5 mUimin ± 8.86 SD versus 17.2 mU/mm ± 7.74 SD, p-value = 0.001) and higher rate of spontaneous vaginal delivery (92.5% versus 87.5%, p-value = 0.001) with lower caesarean rate (7.5% versus 12.5%, p-value 0.001). The number of PGE2 for labour induction was not statistically significant between both groups (mean 1.35 ± 0.50 SD versus 1.50 ± 0.49 SD, p-value = 0.30). Analgesia used between both groups was not statistically significant (72.5% versus 70% respectively, p- value = 0.06). Women in membranes sweeping group experienced more discomfort compared To non membranes sweeping group (82.5% versus 30%, p- value = 0001). Primigravidas were the majority who experienced discomfort during vaginal examination due to the procedure of membranes sweeping (27.5% versus 14%. p-value = 0.01). There was no incidence of intrapartum fever but more patients had postpartum fever in non membranes sweeping group (7,5% versus 2.5%) compared to membranes sweeping group respectively. The incidence of postpartum fever was statistically significant (p value = 0.00 1), however the incidence of postpartum fever occurred in the patients who had undergone caesarean section. Similarly, the usage of antibiotics peripartum was statistically significant in non membranes sweeping group (12.5% versus 7.5%, p-value = 0.001) compared to membranes sweeping group respectively. The antibiotics were given to patients who delivered via caesarean section. The postpartum fever

may be contributed by postoperative morbidity and the usage of antibiotics were due to routine usage of prophylactic antibiotics given postoperatively. Thus, the incidence of postpartum fever and the usage of antibiotics was not significant in this study. The incidence of meconium stained liquor was not statistically significant between both groups (5.0% versus 7.5%. p-value = 0.07) respectively and the incidence of abnormal CTG was not statistically significant between both groups (5.0% versus 2.5%, p-value = 0.42). Apgar score at 1 minute and at 5 minutes after birth were comparable between both groups and there was no incidence of neonatal sepsis and neonatal death.

Conclusion : This randomized study concluded that membranes sweeping in conjunction with formal method of labour induction at term has values and benefits in term of maternal and fetal outcomes. It was a safe procedure but women who had membranes sweeping experienced more discomfort especially in primigravidas. Membranes sweeping with formal methods of labour induction shorten labour interval, duration of labour, lower mean dose of oxytocin used in labour and increased spontaneous vaginal delivery rate. The number of PGE2 needed to induce labour and the analgesia used in labour was not statistically significant between both groups. There was no increased in the incidence of maternal fever associated with membranes sweeping. The perinatal outcomes was favourable between both groups and membranes sweeping did not increase the incidence of meconium stained liquor, abnormal CTG, neonatal sepsis and neonatal death.

Assoc. Prof. N. Mohamad Zaki b. N.Mahmood : Supervisor
Prof. Mohamad Shukri bin Othman : Co-Supervisor

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A STUDY ON THE AMBULANCE CALLS RECE WED AT THE CALL CENTRE HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr. Zainal abidin Mohamed@ Ismail
MMed Medicine (Emergency Medicine)

Department of Emergency Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Ambulance call is the entrance to the Emergency Medical Service (EMS) system that delivers patients to the emergency medical care. Communication difficulties may arise upon receiving ambulance calls. Information from the ambulance calls and prehospital treatment need to be documented properly.

Objective : To determine prank calls, the callers characteristic and communication difficulties encountered during receiving ambulance calls at the Call Centre Hospital Universiti Sains Malaysia.

Patients & Methods : A cross sectional observational study was done from September 2005 to January 2006 on telephone calls received at the Call Centre Hospital Universiti Sains Malaysia (HUSM). The Ambulance Service Form HUSM was constructed and validated prior to the study. The telephone calls received at the call centre were recorded into a tape recorder and then analysed by a single evaluator to determine characteristic of telephone calls, difficulties in communication, duration of conversation and similarity of data obtained from ambulance calls to the on scene. SPSS version 12.0 was used to analyse the data.

Result : There were 18,007 calls received at the Call Centre during the study period with only 346 (1.9%) were emergency ambulance calls, and 78% were prank calls. 301 ambulance calls were included and 140 calls (46.5%) had communication difficulties. The most common cause of difficulties was unclear voice of the callers (21%) and significantly associated with callers' gender (p<0.00l), callers' race (p<O.OO number of callers (p<O.OO and number of receivers (p<0.001). The mean duration of conversation was 131 seconds and the mean time of receiving ambulance calls were at 12.41 hours. There were significant difference in duration of conversation between

communication with and without difficulties (p<0.00l). Trauma was the most common case for ambulance calls (27.9%) and 97% of the information obtained was accurately correlated with information at the scene.

Conclusion : There were high percentage of misuse of the emergency telephone lines especially in prank calls. Half of the ambulance calls associated with communication difficulties and the call receivers need to be properly trained in communication skills and medical knowledge.

Dr. Mohd Idzwan bin Zakaria : Supervisor
Dr. Rashidi Ahmad : Co-Supervisor

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A PILOT STUDY ON PROCEDURAL SEDATION AMONG ADULT PATIENTS AT DEPARTMENT OF EMERGENCY HOSPITAL UNIVERSITI SAINS MALAYSIA KELANTAN. A COMPARISON BETWEEN FENTANYL WITH MIDAZOLAM AND FENTANYL WITH PROPOFOL.

Dr. Ahmad Hashim
MMed (Emergency Medicine)

Department of Emergency Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : This is a pilot study looking at the safety and effectiveness of procedural sedation technique carried out at the Emergency Department (ED) HUSM Kelantan over a period of one year extending from December 2004 to December 2005. In other words, there were no study has been carried out before to compare the effectiveness and efficacy of using midazolam and propofol for any brief, intense procedures in ED setting. With this study, the standard drugs used and the measures during procedural sedation can be applied in all emergency departments.

Objectives : The objectives are ; to compare the safety and efficacy between a combination of fentanyl and propofol with fentanyl and midazolam ; to observe outcomes in subjects undergoing a procedure at the ED when they are under procedural sedation. These outcomes include the blood pressure, mean arterial pressure, respiratory rate, heart rate, oxygen saturation, end tidal carbon dioxide and duration to regain full consciousness after the procedural sedation.

Methodology : Fourty patients were needed for its significant evaluation in this study. They were randomly selected using the computer generated random permuted blocks of four patients. 20 patients were grouped together as A and the remaining 20 patients as group B. Drugs used were single blinded to prevent any biasness. Drug A represents proporfol while drug B represents midazolam. The procedures involved include, orthopaedic manipulation such as reduction of fractures, reduction of dislocated joints, abcess drainage, toilet and wound debridment, laceration wounds repaired and cardioversion. These subjects were monitored for their vital signs and end tidal carbon dioxide every ten minutes till the procedure is completed. The duration of recovery were documented when the subjects had completed the procedure until regaining a full consciousness or recovery. Patients were continued to be monitored at the observation ward before being discharged home or admitted to the respective ward. These findings were analysed using Mann-Whytney U statistical analysis.

Result : Majority of patients under study were represented by Malays and 75.6% were males. The youngest subject was 13 years old while the oldest was 78 years of age with the mean age of 37.8 years. None of the patients developed any complication while under procedural sedation. Both propofol and mizadolam were found to be not significant (p value > 0.05) in outcomes as follow :- Blood pressure ; Mean Arterial pressure ; Heart rate ; Respiratory Rate ; Oxygen saturation ; End tidal CO_2. This study also found that patients who received propofol (mean

29 ± 11 .03) regained full consciousness at a much faster rate when compared to midazolam (mean 71.75 ± 60.63), p value <0.001, better choice of drug to be used in the ED setting for procedural sedation. The recommended dose for propofol to be used for procedural sedation at the ED setting is 1mg/kg as a bolus dose followed by 0.5mg/kg if required in a titrating dose while for midazolam the recommended dose is 0.1 mg/kg as a bolus dose followed by 0.1mg/kg if needed in a titrating dose. Capnograph has proven to be a very sensitive instrument to detect early sign of hypoventilation and is strongly recommended to be used when procedural sedation is performed at the ED setting.

Conclusion : This pilot study has proved there were no difference between the studied drugs midazolam and propofol during procedural sedation. Instead, propofol has shown to be more efficacious and shortened the recovery time for patients to regain full consciousness. These two drugs can be used as procedural sedation agents in ED for various short intense painful procedures.

Dr. Nik Hisamudin Nik Abdul Rahman : Supervisor
Dr. Kamarul Imram : Co-Supervisor
Dr. Zulkarnain Sinor : Co-Supervisor

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A STUDY ON CUSTOMER SATISFACTION WITH HOSPITAL UNIVERSITI SAINS MALAYSIA AMBULANCE SERVICE

Dr. Anisah Adnan
MMed (Emergency Medicine)

Department of Emergency Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Ambulance services are a part of prehospital care services provided by the EMS system in Malaysia. This service was started more than a decade ago, but the system was not centralised. In Malaysia, the ambulance services under the MOH are controlled by individual hospitals and the emergency department staff, usually paramedics, are the people who run the service.

Objectives : The objective of this prospective study was to find the customer perception with HUSM ambulance service run by the EMD team. In a more detailed manner, this study aimed to look into various factors affecting customer perception of the HUSM ambulance service, and if these factors were related to the local demography. The customer perception was therefore used as a measurement tool in quantifying the quality of prehospital care provided by the HUSM ambulance service.

Methodology : A total of 87 subjects participated in this satisfaction survey. All subjects using the HUSM ambulance were included in this study. For patients of GCS<15 or age< 12, the accompanying relatives or guardians were taken as subjects. Subjects in severe pain or distress are excluded from the study. Subjects were interviewed by the EMD team leader with an independent coordinator to reduce biasness. Customer perception was measured on a Likert scoring scale based on 6 domains: vehicle, staff attitude, performance, professionalism, efficiency of service and general image of HUSM ambulance service.

Results : This study showed that in overall, majority of the subjects had a good perception of the services provided by HUSM ambulance service. Married subjects were found to have a better perception of HUSM ambulance service compared to single subjects. Customer perception was highest for image and staff attitude, mainly with staff gentleness and attentiveness. The lowest score of customer perception was with professionalism of EMD staff, particularly perceived level of training and adequacy of equipments in the ambulances.

Conclusion : The results show that although majority of subjects had good perception of HUSM ambulance service, factors such as level of training of the EMI staff and adequate equipments in the ambulances are important factors in affecting customer perception and satisfaction

with the services provided.

Dr. Nik Hisamudin Nik Abdul Rahman : Supervisor
Dr. Chew Keng Sheng : Co-Supervisor
Dr. Zainal Abidin Mohamed : Co-Supervisor

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A PILOT STUDY ON RETURN OF SPONTANEOUS CIRCULATION (ROSC) AMONG PATIENTS WITH CARDIOPULMONARY RESUSCITATION (CPR) PERFORMED IN EMERGENCY DEPARTMENT, HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr. Chew Keng Sheng
MMed (Emergency Medicine)

Department of Emergency Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Cardiopulmonary resuscitation (CPR) is an integral part of routine job prescription for emergency medicine doctors. Since the 1950s, the technique of CPR is ever improving. The introduction of the Utstein's style of reporting of outcomes of CPR has further enhanced standardized research works in this vital area. The standardization of definitions and reporting template has also allowed more meaningful comparison of one study with another. Despite that, there has not been many published works in this area in Malaysia. This pilot study serves to look into the effectiveness of CPR performed in Emergency Department (ED), Hospital Universiti Sains Malaysia (HUSM). Two end points of this study are : whether return of spontaneous circulation (ROSC) achieved regardless of whether the ROSC was sustained until admission to ward ; whether ROSC achieved and sustained until admission to ward. This is also known as survival to admission

Methodology : This study was conducted as a prospective, observational study. All patients with CPR done in ED, HUSM were included in this study. The study was undertaken for a period of one year, from March 2005 to March 2006. Cardiac arrest cases where CPR was not performed were excluded from the study.

Results : A total of 63 cardiac arrest patients were analyzed. Out of these 63 patients, 23 (36.5%) of the 63 patients were categorized as out-of-hospital Arrests (01-IA) whereas the other 40 (63.5%) patients had an in-hospital Arrest (IHA). In total, out of these 63 patients, 19 (30.2%) of them had ROSC regardless of whether the ROSC was sustained until admission to ward. The other 44 (69.8%) did not achieve ROSC at all. Only 6 patients (9.5%) achieved ROSC until admission to ward (survival to admission) whereas the other 57 patients (90.5%) did not. In the OHA subgroup analysis, ROSC achieved regardless of whether it was sustained until admission to ward is only 17.4% (n4) and ROSC achieved until admission to ward is only 4.3% (n=1). In the IHA subgroup analysis. ROSC achieved regardless of whether it was sustained until admission to ward is slightly better at 37.5% (n=15) and ROSC achieved until admission to ward is slightly better at 12.5% (n5). The chance of a patient with IHA to achieve ROSC regardless of whether the ROSC was sustained until admission to ward was about two times (37.5%) higher compared to a patient with OHA (17.4%) (pO.O94). Other factors found to be associated with higher chance of survival rate are early commencement of CPR within 5 minutes, presence of emergency physicians during CI the presence of emergency medicine residents during CPR and shockable rhythm as the initial cardiac arrest rhythm.

Conclusion : Overall, ROSC achieved regardless of whether it was sustained until admission to ward is only 30.2% and ROSC achieved until admission to ward (survival to admission) is only 9.5%. Factors the possibly influence the outcomes positively (which means increasing the change of achieving ROSC and ROSC until admission to ward) re in hospital Cardiac Arrests as the type of arrest, early commencement

of CPR within 5 minutes, presences of emergency physicians, presence or emergency medicine residents and shockable rhythm as the initial cardiac rhytm. Out of these five factors, only shockable rhytm as the initial cardiac arrest rhythm is statically significant.

Asoc. Prof. Dr. Kamaruddin Jaalam : Supervisor
Dr. Idzwan Zakaria : Co-Supervisor

● ●

SCREENING FOR GESTATIONAL DIABETES MELLITUS AND ASSOCIATED RISK FACTORS BEFORE 20 WEEKS OF GESTATION IN HEALTH CLINICS, TANAH MERAH, KELANTAN

Dr. Yusmawati Mohd. Yusof
MMed (Family Medicine)

Department of Family Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Early diagnosis and treatment is the most important issue for the successful management of gestational diabetes mellitus. Thus lays the importance of screening for gestational diabetes mellitus, which allows for early initiation of appropriate therapy which remains the cornerstone of management of gestational diabetes mellitus.

Objectives : The objectives of this study were to determine the incidence of gestational diabetes mellitus before 20 weeks, at 24-28 weeks and at 32-34 weeks of gestation and to evaluate factors associated with gestational diabetes mellitus before 20 weeks of gestation.

Patients & Methods : This is a cross sectional study. A total of 376 pregnant women started their antenatal care at health clinics Tanah Merah, Kelantan before 20 weeks of gestation and were at risk of developing gestational diabetes mellitus were enrolled. All pregnant women had initial two hours 75-g oral glucose tolerance test before 20 weeks of gestation. If the results were negative, second OGTT were performed at 24-28 weeks and subsequently at 32-34 weeks if still negative. A diagnosis of gestational diabetes mellitus was made if fasting glucose > 6.1 mmol/l or 2 hours 7.8 mmol/l. The main outcome measures were incidences of gestational diabetes mellitus before 20 weeks, at 24-28 and at 32-34 weeks of gestation and the association between clinical risk factors and gestational diabetes mellitus below 20 weeks of gestation. Data was analyzed using SPSS version 12.0.

Results : The results showed that the overall incidence of gestational diabetes mellitus was 47.9 %. The incidence of GDM before 20 weeks of gestation was 33.0 %, another 13.5 % were diagnosed between 24-28 weeks and 10.1 % between 32-34 weeks. The three independent risks for developing gestational diabetes mellitus before 20 weeks of gestation were age> 35 years, history of gestational diabetes mellitus in previous pregnancy and family history of diabetes mellitus.

Conclusions : In conclusion, screening for gestational diabetes mellitus in Tanah Merah, Kelantan is crucial in detecting early onset of gestational diabetes mellitus since more than half of women with gestational diabetes mellitus (124 of 180 , 68.9%) were diagnosed early in their pregnancies. The three specific groups of women (women age> 35 years, women who had gestational diabetes mellitus in previous pregnancy and women with family history of diabetes mellitus) should be promptly identified, counseled regarding the important of early booking and early screening for gestational diabetes mellitus.

Dr. Harmy Mohamed : Supervisor
Dr. Nik Harlina Roza Nik Karim : Co-Supervisor
Dr. Juwita Shaaban : Co-Supervisor

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THE METABOLIC METABOLIC SYNDROME AMONG OBESE PATIENTS ATTENDING OBESITY CLINIC IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr. Termizy bin Hassan Mashat
MMed (Family Medicine)

**Department of Family Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.**

Introduction : The increase prevalence of Metabolic Syndrome worldwide is closely related to the rising obesity epidemic. However, the assessment on prevalence of Metabolic Syndrome in obesity is lacking. The objectives of the study were to determine the prevalence and identify the associated and prognostic, factors that influence the risk of metabolic syndrome among obese patients attending obesity clinic in Hospital Universiti Sains Malaysia.

Patients & Methods : A cross sectional study was conducted involving 102 obese persons who attending the obesity clinic Hospital Universiti Sains Malaysia from 1 January 3 1 December 2005. All patients who fulfilled the criteria were included in the study. The patients' clinic records were reviewed by the researcher. The Metabolic Syndrome was defined according to the International Diabetes Federation (IDF) criteria; included central obesity, blood pressure, fasting glucose, triglyceride and high density lipoprotein (l cholesterol. The required information on the demographic and physical and biochemical parameters related to the metabolic co-morbidities was recorded into a data collection form

Results : The overall prevalence of Metabolic Syndrome among. obese patient attending obesity clinic in HUSM was 40.2 percent. The prevalence of metabolic Syndrome was noted to increase with increase BMI class; from class I to class 2. However, the prevalence was lower in obesity class 3. The prevalence of metabolic co-morbidities of raised blood pressure, low high density lipoprotein, raised fasting blood glucose and high triglyceride were 42, 40, 36 dan 17 percent respectively. A quarter of obese patients in this study had no other co morbidity. Based on Logistic Regression multivariable analysis, age was the only significant associated factor that influenced the risk of having Metabolic Syndrome among obese patients attending obesity clinic in HUSM (OR =1.03, 95% CI 1.01, 1 .09).

Conclusion : The prevalence of Metabolic Syndrome among obese patients attending obesity clinic in HUSM was high compared to the general population but lower as compared with other studies in obese person. Age was the only identified parameter to significantly influence the risk of Metabolic Syndrome. The obesity class was found not to influence the risk of Metabolic Syndrome. A further study is highly recommended to confirm the findings in this Study.

**Dato' Prof. Mafauzy Mohamed : Supervisor
Assoc. Prof. Aziz Al-Safi bin Ismail : Co-Supervisor**

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OVERWEIGHT, SMOKING AND SELF-ESTEEM AMONG ADOLESCENTS IN KOTA BHARU, KELANTAN

Dr. Norhayati Mohd Noor
MMed (Family Health)

**Department of Family Health,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.**

Introduction : Overweight during adolescence has social, economic and psychological consequences and low self-esteem is the first detrimental effect observed. Overweight adolescents with low self-esteem are more likely to engage in high-risk behaviors such as smoking. Besides addiction, another possible explanation for the continuation of smoking by adolescents is the belief that it can help control body weight.

Objective : The study is aimed to determine the prevalence of overweight and smoking; the association between Body Mass Index (BMI) and smoking; the association between self-esteem and smoking; and comparison of self-esteem between overweight and non-overweight among secondary school students in Kota Bharu, Kelantan.

Methodology : A cross-sectional study was conducted between January to June 2005 among 1364 randomly selected Form 2 and Form 4 students in 10 co-educational government secondary schools in Kota Bharu. Part I Questionnaire was a guided self-administered questionnaire which required responses from students on demographic data, overweight, smoking and self-esteem. Self-esteem was assessed using Malaysian version of Rosenberg SES. Part 2 Questionnaire required responses from either their parents or guardians on socio-economic status. BMI measurement was taken. Data was entered using SPSS 12.0 and analyzed using Stata 8.0. A survey data analysis was applied.

Results : The prevalence of overweight was 12.5% (95% CI: 10.4, 14.6) and the prevalence of smokers was 6.7% (95% CI: 3.8, 9.7). There was no association between BMI and smoking (P=0.806) after controlling for age, gender, family history of overweight, breakfast, snack, time spent on television and computer, and physical activity. No association found between Rosenberg SES score and smoking (P=0.593) after controlling for age, gender, BMI and school status. There was no difference in adjusted mean Rosenberg SES score between overweight and non-overweight (P=0.419) after controlling for age, gender, smoking and school status. The adjusted mean Rosenberg SES score of overweight was 0.32 lower than non-overweight.

Conclusion : The prevalence of overweight and smoking was 12.5% and 6.7% respectively. There was no association between BMI and smoking; no association between self-esteem and smoking; and no difference in self-esteem between overweight and non-overweight adolescents in Kota Bharu.

**Prof. Zulkifli Ahmad : Supervisor
Dr. Rohana Abdul Jalil : Co-Supervisor
Dr. Mohd Jamil Ayub : Co-Supervisor**

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RELATIONSHIP BETWEEN OBSTETRIC RISK FACTORS AND POSTNATAL DEPRESSION (PND) AMONG WOMEN WHO DELIVERS AT HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM).

Dr. Mohd. Nazri bin Mohd. Daud
MMed (Family Medicine)

**Department of Family Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.**

Objective : To determine the prevalence of postnatal depression (PND) and its relationship with obstetric risk factors in Hospital Universiti Sains Malaysia (HUSM), Kota Bharu, Kelantan between March and August 2005.

Patients & Methods : This is a cross sectional study involving 293 women from postnatal ward HUSM. They were screened for depression at day 1 to day 5 postpartum and 4 to 6 weeks postpartum using the Edinburgh Postnatal Depression Scale (EPDS). At the first visit, the women completed questionnaires on socio-demography and obstetric risk factors, Brief Patient Health Questionnaire (BPHQ-9) and Life Event Scale questionnaire. At the second visit which is 4-6 weeks postpartum, they only completed EPDS.

Results : Two hundred and ninety-three women successfully completed the study (response rates = 89.3%). The prevalence of PND at 4-6 weeks postpartum using the EPDS score of 12 or more was 27.3% (80 out of 293 women). The prevalence of depression at early postpartum period based on EPDS was 22.5%. Women with the history

of abortion (p<0.05) and early postnatal depression (p<O.O5) was significantly associated with PND.

Conclusion : Postnatal depression among women in Hospital USM was more common compared to previously reported series in Malaysia. Women with the history of abortion and early postnatal depression was significantly associated with PND. Early identification of potential risk for postnatal depression should include assessment of socio-demography, personality, psychiatric history and recent life events, as well as past and present obstetric factors.

Dr. Azidah binti Abdul Kadir : Supervisor
Dr. Mohd Jamil Ayub : Co-Supervisor
Dr. Nik Hazlina Bt Abd Rahman : Co-Supervisor

● ●

THE UNIFIED PARKINSON'S DISEASE RATING SCALE SCORE IN PARKINSON'S DISEASE PATIENTS WITH AND WITHOUT COGNITIVE IMPAIRMENT.

Dr. Hilmi bin Abdullah
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Parkinson's disease (PD) is widely known as a 'motor' disease, but it also has several non-motor features including cognitive impairment. Cognitive impairment has significant impacts on several aspects of PD. There is as yet a study on cognitive impairment and PD done involving our population.

Objectives : To compare the Unified Parkinson's Disease Rating Scale (UPDRS) score between PD patients with and without cognitive impairment. Secondly, to determine the prevalence of cognitive impairment in patients with PD under Hospital Universiti Sains Malaysia (HUSM) follow-up.

Patients & Methods : This was a cross-sectional study done at the HUSM Neurology Clinic, beginning from June till November 2006. Eighty PD patients who satisfied the study criteria were recruited into the study. Their cognitive status was assessed using the validated Malay version of the Mini-Mental State Examination (MMSE). A score of 24/30 signified presence of cognitive impairment while> 24130 was normal. Regardless of their MMSE scores, all the patients then underwent assessment using the UPDRS. The UPDRS contains four items i.e. mentation, behaviour, and mood; activities of daily living; motor examination; and complications of therapy. Scores were taken from each item, and they were then totaled to obtain a total score. The study protocol was reviewed and approved by the USM Ethics and Research Committee.

Results: Thirty two patients (40%) had cognitive impairment, ranging from mild to severe, based on the MMSE. Patients with cognitive impairment had significantly worse

scores for each UPDRS item compared to the non-cognitive impairment group (p < 0.05). They also had worse rigidity and bradykinesia compared to the other group (p K 005). After adjusting for potential confounders e.g. age and disease duration, the cognitive impairment group still performed worse in the L assessment (p K 0.05).

Conclusion: The study showed that the presence of cognitive impairment resulted in worse UPDRS scores. There was a high prevalence of cognitive impairment in PD patients under HEJSM follow-up. Therefore, PD patients should be routinely screened for cognitive impairment.

Dr. Atul Prasad : Supervisor
Dr. Che' Wan Aminu-Din Hashim : Co-Supervisor

● ●

THE PREVALENCE OF NUTRITIONAL ANAEMIA IN PREGNANT WOMEN AT HUSM AND ITS CORRELATION WITH THE RAEMATOLOGICAL PARAMETERS

Dr. Rusmawati Ismail
MMed Medicine (Surgery)

Department of Surgery,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Nutritional anaemia in pregnancy continues to be a common clinical problem in many developing countries and significantly contributes to maternal mortality and to both maternal and fetal morbidity.

Objectives : The objectives of this study were to determine the prevalence of anaemia and nutritional anaemia among pregnant women at HUSM and to look for correlation between haematological parameters and serum ferritin, serum folate, red cell folate and vitamin B 12.

Patients & Methods : A cross sectional study of pregnant women attending antenatal clinic at HUSM was conducted in year 2005. A systematic random sampling method was applied and 278 patients were recruited. Full blood count, serum ferritin, serum folate, red cell folate and vitamin B12 levels were determined by automated haematology analyzer Sysmex KX 21N and Access Immunoassay System respectively and results were analysed by SPSS version 12.

Results : The means (SDs) of age. period of amenorrhoea, and gravida were 31.1 (5.9) years, 20.7 (7.7) weeks and 3 (3) respectively. Sixty five percent (65%) of the study populations were in the second trimester and 62.2 % are multigravida. Thirty seven percent (37%) were not on any haematinics while 119 % were taking only one type of haematinics. The mean (SD) of hemoglobin level was 11.3 g/dL(1.1). The prevalence of anaemia (defined by haemoglobin less than 11.0g/dL) was 37.0 %. The means (SDs) for serum ferritin, serum folate, vitamin B12 and red cell folate were 17.7 $\mu g/L$ (30.4), 22.9 nmol/L (13.0), 284.6 pmol/L (135.7) and 951.6 nmol/L (441.5) respectively. Serum ferritin less than 12.0 $\mu g/L$ were recorded in 34.7 % of patients and 47.6 % have serum ferritin between 12.0 $\mu g/L$ and 50.0 $\mu g/L$. Among those with serum ferritin less than 12.0 $\mu g/l$, 50.0 % of them developed iron deficiency anaemia whereas the other 50.0 % were in the state of iron deficiency. Four patients (1.5 %) had folate deficiency defined by red cell folate less than 372 nmol/l. Three patients (1.2%) probably had vitamin B12 deficiency as defined by vitamin 812 less than 107.0 pmol/l. Gestational age and folate intake were found to be significantly associated with anaemia in pregnancy. Significant positive correlations noted between haemogobin levels and other red cell parameters. Mean cell haemoglobin showed a significant correlation as a predictor for red cell folate, however other haematological parameters were not significantly correlated as a predictor for serum ferritin, folate or vitamin B12.

Conclusions : In conclusion, the prevalence of anaemia among pregnant women at HUSM is high with iron deficiency being the commonest nutritional deficiency. In addition, it was shown that the assessment of iron, fofate or vitamin B12 status cannot be predicted by haemoglobin levels or other red cell parameters. It is therefore recommended to perform full blood count and serum ferritin together in pregnant women in centres with fascility, whereas folate and vitamin B12 level are recommended for pregnant mother with clinical suspicion and risk factors.

Dr. Suhair Abbas Ahmed : Supervisor
Assoc.Prof. Dr. Rosline Hassan : Co-Supervisor

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A STUDY ON FIBRINOLYTIC MARKERS IN ACUTE STROKE PATIENTS IN HUSM

Dr. Siti Zaharah Bt. Idris
MPath (Haematology)

**Department of Haematology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.**

Introduction : The fibrinolytic system plays an important role in preventing intra-vascular thrombosis. Previous study had shown the pathogenesis of stroke is related to abnormality in fibrinolytic system.

Objectives : This study was conducted in HUSM for a one-year period from March 2005 to February 2006. Stroke patients were selected from adult wards whereas control individuals were chosen from various clinics.

Methodology : This study was done to compare the levels of three fibrinolytic markers i.e. plasminogen (plg), tissue-plasminogen activator (t-PA) and plasminogen activator inhibitor type-I (PAl-i) between acute stroke patients and stable non-stroke individuals and to investigate the clinical significance of these markers. One hundred and six individuals and 51 acute stroke patients were selected. Both groups have similar risk factors. Their bloods were tested for the level oft-PA and PAI-l using ELISA technique (Biopool TintElize) whereas plasminogen was tested using colorimetric assay (automated system). They were follow-up over a period of 3 months to detect their survival and recovery.

Results : We found only t-PA level was significantly higher in acute stroke patients compared to control group even after adjusting the cofounders using ANCOVA test. Plasminogen and PAl- I showed no significant statistical association between both groups. For PAl- 1, the level is lower in stroke group after adjusting the confounders. There are no significant statistical association between the three fibrinolytic markers and age, number of risk factors, disease severity, survival and neurological recovery. We observed all the eight patients who died during hospitalization or at the time of follow-up possessed high level of t-PA although statistically not significant. The limitation of this study was that we could not show the abnormality in t-PA is primary or secondary events to the development of stroke. High t-PA level indicates abnormal intravascular fibrinolysis which is probably an initiator of the cerebrovascular event or indicating of underlying diseased blood vessels (endothelial injury).

Conclusions : This finding supports the hypothesis that disturbances in fibrinolysis occur in stroke patients during cerebrovascular event. We found an association between high t-PA antigen level and stroke with a 4.6-fold odd ratio. This could be a marker to predict high-risk patients for stroke development. Using haemostatic model addressing fibrinolytic system is a potential future therapy to prevent acute episodes of stroke together with other therapeutic agents.

**Dr. Wan Zaidah Abdullah : Supervisor
Dr. Shalini Bashkar : Co-Supervisor**

● ●

A PILOT STUDY TO DETECT VON WILLEBRANG DISEASE IN WOMAN WITH MENORRHAGIA IN HUSM

Dr. Wan Aswani Bt Wan Yusof
MPath (Haematology)

**Department of Pathology (Haematology),
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.**

Introduction : Von Willebrand disease (vWD) is the most common inherited bleeding disorders, found in approximately 1% of the general population, without ethnic differences. vWD results from a qualitative or quantitative defect in von Willebrand factor (vWF) resulting in impaired primary homeostasis. Menorrhagia is defined objectively as> 80m1 menstrual blood loss per cycle or menses lasting longer than 7 days and is a common gynecologic problem in women of reproductive age. However, in 50% of cases, no pathology is detectable. Menorrhagia is valuable predictors of bleeding disorder in women. The frequency of vWD in women with menorrhagia ranges from 5 in different studies.

Objectives : The aim of this study is to know the prevalence of vWD in women with menorrhagia of unknown cause and identify the subtypes of the disease.

Patients & Methods : Thirty women who came to Obstetric and Gynecology Clinic, HUSM with menorrhagia without uterine pathology was selected for this study. A detailed history related to menorrhagia was acquired from them. Full blood count (FBC), prothrombin time (PT), activated partial prothrombin time (APTT), ABO blood grouping, factor VIII activity (FVIII: C), von Willebrand factor antigen (vWF: Ag) and von Willebrand factor activity (vWF: Ac) and collagen binding assays (vWF: CBA) were measured in all patients. Subsequently ristocetin induced platelet aggregation (RTPA) was performed for those who had abnormal von Willebrand studies.

Results : Out of 30, 97% were Malay with median age of 42 years old. Four (13.3%) patients have abnormal parameters of von Willebrand studies. Two were diagnosed as 'possible' vWD Type 1, one patient as von Willebrand deficiency related to blood group 0 and the other one as 'possible' vWD Type 2 either subtype 2A or 2M. There is no association between age, onset of menorrhagia, duration of menstruation, history of blood transfusion or other bleeding tendencies with the development of the disease. Based on von Willebrand studies, von Willebrand functional assays (vWF: Ac and vWF: CBA) was significantly lower than vWF: Ag and FVIII: C in this 4 patients. Effect of hormone replacement therapy and blood group were analyzed and both did not show statistically significant in contributing to von Willebrand profiles.

Conclusions : In conclusion, to date this is the first reported cases of vWD among Malaysian women with menorrhagia without uterine pathology. vWD is highly prevalence and though coagulation screening test is not helpful, we would like to suggest that a von Willebrand studies is directed to patient at least before planning for an invasive procedure.

**Prof. Madya Dr.Rosline Hassan : Supervisor
Dr. Wan Zaidah Abdullah : Co-Supervisor**

● ●

TH1 AND TH2 CYTOKINE PROFILE IN A CASE OF UNEXPLAINED INFERTILITY IN KOTA BHARU, KELANTAN

Dr. Wan Zuraida Wan Ab. Hamid
MPath (Immunology)

**Department of Immunology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.**

Introduction : Unexplained infertility, referring to the failure to conceive of a couple in whom no definite cause of infertility can be found despite a complete infertility evaluation. The incidence of unexplained infertility was reported to be approximately 15% - 17% among the infertile couples. The etiology is still remain unknown, however, cytokine profile of T helper 1 (Th 1) subsets such as interferon gamma (IFN y) and interleukin 12 (IL 12) might play a role in the cause of unexplained infertility.

Objectives : This study was designed to measure the level of four different cytokines [1 consists of IFN y, IL 12 and T helper 2 (Th 2) consists of interleukin 4 (IL 4), interleukin 13 (IL 13)] in unexplained infertile and fertile subjects in order to determine the role of these cytokines in unexplained infertility. Hence this study is aimed to determine the distribution of cytokine profile, the mean differences of cytokine concentration between unexplained infertile and fertile groups as well as the association of other factors such as age, body mass index

(BMI), occupation and education level toward unexplained infertility.

Patients & Methods : A cross sectional study was done from January to December 2005. A Hundred respondents were enrolled, of whom 50 women had unexplained infertility and 50 women with normal fertility. In this study, women with unexplained infertility were chosen from Infertility Clinic, Hospital Universiti Sains Malaysia (HUSM) and Hospital Raja Perempuan Zainab II (HRPZ II) due to limited sample and fertile women were gathered from HUSM. All patients who fulfilled the inclusion and exclusion criteria and gave written consent were recruited for this study. Interviewer guided questionnaire was administered to gather patient's information. Blood was taken and serum was separated and alliquoted for the measurement of four cytokines, which are IL 12, IFN y, IL 4 and IL 13 using the Enzyme Linked Immunosorbent Assay (ELISA) assay.

Results : We found that in univariate analysis the median (interquartile range) concentration of IL 12 and IFN ' in unexplained infertility were 7.6 (10.04), and 8.0 (16.61) respectively. In addition, the mean differences (95% CI) of IL 12 and IFN y were -14.44, and -19.11 with P value of 0.003, and 0.0 15. Therefore, the mean concentration of IL 12 and IFN y was significantly different between unexplained infertile and fertile groups. After controlling the variables in multiple logistic regression, the significant factors associated with unexplained infertility were IL 12 (OR: 1.305 ; 95% CI: 1.119, 1.522; p = 0.001) and IFN (OR: 1.291; 95% CI: 1.057, 1.576;p = 0.012). On the other hand, other variables such as IL 4, IL 13, age, BMI, occupation and education level were found to have no significant association with unexplained infertility

Conclusion : This study showed that certain interleukins can play a role in infertility. Increase serum level of IL 12 and IFN ' might be one of an underlying factor contributing to the infertility by means of skewing towards Th 1 which is responsible for cellular mediated immunity.

Dr. Nurul Khaiza bt Yahya : Supervisor
Prof. Madya Nik Hazlina Nik Hussain : Co-Supervisor

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ACUTE NON-VARICEAL UPPER GASTROINTESTINAL HAEMORRHAGE IN PATIENTS WITH CHRONIC KIDNEY DISEASE: A CASE CONTROL STUDY IN HOSPITAL UNIVERSITI SAINS MALAYSIA AND HOSPITAL RAJA PEREMPUAN ZAINAB II

Dr. Zuad Firdaus bin Rapiah
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Acute gastrointestinal haemorrhage is one of the most common medical emergencies and remains as a major cause of morbidity and mortality among patients admitted to the hospital. Among advance stage chronic kidney disease patients, it has been estimated that gastrointestinal haemorrhage accounts for 3 to 7% of all death. Local statistic on the risk and prognosis of this special group of population would be valuable because it will affect decisions concerning intensive care unit admission, emergency endoscopy and gastrointestinal surgery.

Objective : A case-control study on the clinical presentation, aetiology of gastrointestinal lesion, clinical course, morbidity and mortality of patients with chronic kidney disease evaluated for acute non- vaxiceal UGIH was performed in HUSM and HRPZ II.

Methodology : This case control study was conducted from January 2003 to December 2006 (a period of 48 months). 53 patients with chronic kidney disease and eligible for the study according to the inclusion and exclusion criteria were selected as cases. Another 107 patients were selected via systemic sampling as the control group (ratio 1:2). Data pertaining to endoscopic diagnosis, contributing factors of bleeding and the course and outcome of the hospitalization were analyzed. Continuous variables were expressed as mean and standard deviation, whereas categorical variables were calculated for frequency and percentage. Chi square test or Fisher exact test and independent t-test was used as appropriate.

Results : Patients with chronic kidney disease represent 9.3% of the total number of patients evaluated for acute non-variceal UGIH during the study period. Gastric ulcer was the most common cause of UGI}{ in the renal failure group, followed by duodenal ulcer and erosive gastritis. No significant difference noted in bleeding aetiology between cases and controls. The mean hospital stay was much higher at 18.3 days compared to 9.7 days in the control group (p<O.OO The chronic renal failure group requires a higher amount of packed cell transfusion (p41.OO1). The group with chronic renal disease had a significantly higher rate of re-bleeding compared to the. control group (28.3% vs. 6.5%) (p<O.OO1). The mortality was significantly higher in the patients with chronic kidney disease than in those without (17% vs. 4.7%) (p0.015). Risk factors identified to be associated with higher mortality rate in acute UGIH include presence of re-bleeding and higher requirement of pack cell transfusion.

Conclusion : Peptic ulcer disease was the most common cause of acute non-variceal UGIR in patients with chronic renal failure. In patients with moderate to severe chronic kidney disease, acute non-variceal UGIH was associated with a greater length of hospital stay, a greater requirement of blood transfusion, a greater risk of re-bleeding and a higher rate of mortality compared to those without chronic kidney disease.

Dr. Amry Abd Rahim : Supervisor
Dr. Hj. Rosemi Salleh : Co-Supervisor

● ●

THE PATTERN OF BODY MASS INDEX AMONG STABLE CHRONIC HAEMODIALYSIS PATIENTS: ITS EFFECT ON BLOOD PRESSURE, LIPID PROFILE AND QUALITY OF LIFE

Dr. Anilawati Mat Jelani
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : In Malaysia, 26.5% of the adult population was found to be overweight and 13% was underweight. In overall haemodialysis population in Malaysia, inclusive of stable and new patients, the reported prevalence of underweight and overweight was 14% and 29% respectively. It was not known whether the pattern of BMI among stable chronic haemodialysis patients was similar to the previous reported studies. Hence, this study was conducted to address this issue.

Patients & Methods : This was a retrospective cohort and cross-sectional study. It was conducted from June to November 2006 in six fully government sponsored haemodialysis centre in Kelantan. Patients who fulfilled our selection criteria were included in the study. Their weight, height, waist circumference, blood pressure readings, Kt/V value and lipid profile were recorded. Patients were interviewed using a set of WHOQOL-BREF questionnaire (Malay version) which has been validated earlier.

Result : In this study, the mean BMI of our patients was 22.6 ± 4.0 kg/rn of which 15.6% of patients had been underweight, 60.0% had normal weight and 24.4% had been overweight. The prevalence of metabolic syndrome among our study population was 28.8%. In this study, the only parameter that had shown significant correlation with BMI was triglyceride (b=0.89; p0.002). In addition, we found that

patients with BMI more than 25 kg/m^2 were shown to have better quality of life than those with normal and low BMI.

Conclusion : The pattern of BMI among stable chronic haemodialysis patients was comparable to overall dialysis population while patients with high BMI were found to have better quality of life.

Assoc. Prof. Dr. Zainal Darus : Supervisor
Dr. Hj. Sukeri Mohamed : Co-Supervisor

● ●

A STUDY ON THE EFFECT OF ADD-ON ROSIGLITAZONE ON THE ANKLE BRACHIAL PRESSURE INDEX OF PATIENTS WITH TYPE 2 DIABETES MELLITUS IN HOSPITAL UN! VERSITI SAINS MALAYSIA

Dr. Fazirah Abdullah
MMed Medicine (Internal Medicine)

Department of Medical Microbiology & Parasitology, School of Medical Sciences, University Sains Malaysia, Health Campus, Kelantan, Malaysia.

Introduction : Rosiglitazone, an oral hypoglycaemic agent of the thiazolidinedione group is used for Type 2 Diabetes treatment. Research has shown that this medication, being a peroxisome proliferator activator receptor-gamma agonist has effects beyond glycaemic control alone. Apart from improving insulin resistance, the non-hypoglycaemic effects of rosiglitazone include reduction of inflammatory markers, improvement of endothelial function, improvement in fibrinolytic activity as well as changes in cholesterol profile. This study intends to see if the non-hypoglycaemic effects of rosiglitazone translate to a clinically noticable reduction in atherosclerosis as well as improvement of fibrinolytic activity. The objectives of this study were to assess changes in surrogate markers of atherosclerotic burden via ankle-brachial pressure index measurements, the number of patients who have significant peripheral artery disease in the study, changes in the diabetic prothrombotic state via serum plasminogen activity, changes in glycaemic control via HbA$_{IC}$ and changes in cholesterol profile by measuring total-, high density lipoprotein- and low density lipoprotein-cholesterol after rosiglitazone is added to a pre existing Type 2 Diabetes treatment regime.

Methodology : A non-blinded cross-sectional cohort study was designed. 59 patients were enrolled. Patients who were rosiglitazone naïve were prescribed 4mg of oral rosiglitazone added-on to their current medication for a period of 10 weeks. Ankle-brachial pressure index, HbA$_{1c}$, serum plasminogen activity levels and fasting cholesterol profile were taken at the start and end of the study taken at the start and end of the study period. Patients were requested not to change their medication dose nor regime throughout the study.

Results : 48 out of 59 patients completed the study. Mean ankle-brachial pressure index was 1.06 ± 0.12 pre-, and 1.07 ± 0.13 post-rosiglitazone (p-value was 0.439). 4 patients (8.3%) had an ABPI ratio of less than 0.90 indicating presence of significant peripheral artery disease. Mean serum plasminogen activity (%) was 96.00 ± 14.77 before rosiglitazone, and 111.98 ± 15.83 after (p-value of 0.006). Initial mean HbA$_{1c}$ (%) was 9.76 ± 2.06, and second mean was 9.25 ± 2.03 (p-value was <0.001). Mean total cholesterol (mmol/L) was 4.95 ± 1.02 before rosiglitazone and 5.32 ± 0.94 after (p0.003). Mean high density lipoprotein cholesterol (mmol/L) at the beginning was 1.32 ± 0.37 and 1.47 ± 0.41 at the end (p<0.00I). Finally, mean low density lipoprotein cholesterol (mmol/L) concentration was 2.89 ± 0.85 at the start and 3.08 ± 0.96 at the end (p 0.098).

Conclusion : This study shows that oral rosiglitazone 4mg daily significantly improves serum plasminogen activity levels, indicating improvement in fibrinolytic activity. There is also a significant reduction in HbA rise in total cholesterol as well as high density lipoprotein-cholesterol levels in line with the findings of previous studies. The

rise in ankle-brachial pressure index and low density lipoprotein-cholesterol measurements however, were not significant in this study. Not many patients had significant peripheral artery disease in this study compared to previous ones before this. However, more research is needed regarding the relation between use of rosiglitazone and atheroma reduction.

Assoc. Prof. Zurkurnai Yusof : Supervisor
Dr. Suhairi Ibrahim : Co-Supervisor
Dr. Asrenee Abdul Razak : Co-Supervisor

● ●

THE RELATION BETWEEN NON INVASIVE MARKERS AND USING THE FIBROTIC INDEX IN LIVER BIOPSY SPECIMEN, FROM HEPATITIS C PATIENTS, AT HOSPITAL ALOR SETAR

Dr. Nazri Mustaffa
MMed Medicine (Internal Medicine)

Department of Medicine
School of Medical Sciences, University Sains Malaysia, Health Campus, Kelantan, Malaysia.

Introduction : Liver biopsy is a mandatory procedure in the management of patients with hepatitis C virus infection, especially for staging fibrosis. We aimed, in our cross sectional study, to assess the relation of the serum biochemical markers for the diagnosis of clinically significant fibrosis(including early stages).

Patients & Methods : We assessed liver biopsy patients with detectable hepatitis C by PCR, for eligibility and took their blood sample for the biochemical test. The analysis was done on 60 patients. We devised a fibrosis index that included the most informative markers (combined With age and sex). Eleven serum markers were assessed as well as fibrosis stages: S0 no fibrosis, Si =fibrous expansion of some portal tracts ± short fibrous septa., S2=fibrous expansion of most portal tracts ± short fibrous septa, S3 fibrous expansion of most portal areas with occasional portal to portal (PP) bridging, S4=fibrous expansion of portal areas with marked bridging (PP as well as portal-central (PC), S5 marked bridging (PP and or PC) with occasional nodules (incomplete cirrhosis), S6 cirrhosis, probable or definite. Statistical analysis was done using mann whitney U test and receiver operating characteristics (ROC) curves.

Results : Mean value of ALT, GMT, aldosterone, HDL, and albumin with mild fibrosis and severe fibrosis,was82±4and 125±31,47.5±31 and 81±25,116.6±56and184± 43, 1.4± 0.3 and 0.9 ± 0.2 and, 42 ± 4 and 35 ± 3.2, respectively with a significant difference between them was (p <0.05). The area under the operating receiver characteristics showed significant accuracy for each biochemical parameters.

Conclusion : We found positive correlation between ALT, GMT, aldosterone, albumin and fibrosis stages on liver biopsy in hepatitis C patients. Serum biochemical markers have significant correlation with stages of liver fibrosis.

Dr. Radzi Muhammad Hassan : Supervisor
Dr. Amry Abd Rahim : Co-Supervisor

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THE CONTROL OF HYPERTENSION AMONG PATIENTS ATTENDING HOSPITAL UNIVERSITI SAINS MALAYSIA HYPERTENSION CLINIC

Dr. Shaharuddin Che Kadir
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,

Health Campus, Kelantan, Malaysia.

Introduction : Hypertension is a common medical problem and it is associated with coronary artery disease, stroke, heart failure and renal dysfunction. However many patients still have an uncontrolled blood pressure despite antihypertensive treatment.

Objectives : This study was conducted with the primary objective of assessing the proportion of patients who achieved their blood pressure targets. The secondary objectives were to evaluate the factors associated with uncontrolled blood pressure and to determine the number of antihypertensive agents required to achieve controlled blood pressure.

Patients & Methods : A cross-sectional study of hypertensive patients attending Hospital USM hypertension clinic was conducted from April until September 2006. Patients' blood pressure, smoking history, BMI, urinalysis for protein, fasting lipid profile, renal function test and fasting blood sugar were obtained. The blood pressure was defined as controlled if < 140/90 mmHg or < 130/80 mmHg in patients with diabetes or chronic kidney disease, or < 125/75 mmHg in patients with proteinuria > lg/day.

Results : A total of 245 patients compliant to medications were recruited. Thirty four percent of them achieved controlled blood pressure (n = 83). Patients with chronic kidney disease were the majority (69.14%) among patients with uncontrolled blood pressure. Univariate analysis showed several factors were associated with uncontrolled blood pressure: older age, malay race, history of smoking; higher creatinine, uric acid, total cholesterol, triglyceride and fasting blood sugar; lower eGFR; the use of more than 2 antihypertensive agents and the use of diuretics; and the presence of diabetes mellitus, chronic kidney disease and proteinuria. However the results of multiple logistic regression analysis indicated that female gender (p = 0.001), malay race (p = 0.031), smoking (p < 0.001), eGFR (p < 0.001) and diabetes mellitus (p = 0.001) were the independent factors associated with uncontrolled blood pressure. Univariate analysis showed that patients who were on treatment with I or 2 antihypertensive agents were more likely to have controlled blood pressure than those on more than 2 drugs (p = 0.001), however, this was not statistically significant in multivariate analysis.

Conclusion : Majority of the hypertensive patients failed to achieve their blood pressure targets. The independent factors associated with uncontrolled blood pressure in our hypertensive population were female gender, malay race, smoking, eGFR and diabetes mellitus. Patients with chronic kidney disease contributed to a considerable number of patients with uncontrolled blood pressure. More intensive management of hypertension is needed to increase the proportion of patients with controlled blood pressure and to reduce the complications of hypertension.

Dr. Mohd. Sapawi Mohamed : Supervisor
Dr. Than Winn : Co-Supervisor

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ACUTE NON-VARICEAL UPPER GASTROINTESTINAL HAEMORRHAGE IN PATIENTS WITH CHRONIC KIDNEY DISEASE: A CASE CONTROL STUDY IN HOSPITAL UNIVERSITI SAINS MALAYSIA AND HOSPITAL RAJA PEREMPUAN ZAINAB II

Dr. Zuad Firdaus bin Rapiah
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Acute gastrointestinal haemorrhage is one of the most common medical emergencies and remains as a major cause of morbidity and mortality among patients admitted to the hospital. Among advance stage chronic kidney disease patients, it has been estimated that gastrointestinal haemorrhage accounts for 3 to 7% of all death. Local statistic on the risk and prognosis of this special group of population would be valuable because it will affect decisions concerning intensive care unit admission, emergency endoscopy and gastrointestinal surgery.

Objective : A case-control study on the clinical presentation, aetiology of gastrointestinal lesion, clinical course, morbidity and mortality of patients with chronic kidney disease evaluated for acute non- vaxiceal UGIH was performed in HUSM and HRPZ II.

Patients & Methods : This case control study was conducted from January 2003 to December 2006 (a period of 48 months). 53 patients with chronic kidney disease and eligible for the study according to the inclusion and exclusion criteria were selected as cases. Another 107 patients were selected via systemic sampling as the control group (ratio 1:2). Data pertaining to endoscopic diagnosis, contributing factors of bleeding and the course and outcome of the hospitalization were analyzed. Continuous variables were expressed as mean and standard deviation, whereas categorical variables were calculated for frequency and percentage. Chi square test or Fisher exact test and independent t-test was used as appropriate.

Results : Patients with chronic kidney disease represent 9.3% of the total number of patients evaluated for acute non-variceal UGIH during the study period. Gastric ulcer was the most common cause of UGI}{ in the renal failure group, followed by duodenal ulcer and erosive gastritis. No significant difference noted in bleeding aetiology between cases and controls. The mean hospital stay was much higher at 18.3 days compared to 9.7 days in the control group (p<O.OO The chronic renal failure group requires a higher amount of packed cell transfusion (p41.OO1). The group with chronic renal disease had a significantly higher rate of re-bleeding compared to the. control group (28.3% vs. 6.5%) (p<O.OO1). The mortality was significantly higher in the patients with chronic kidney disease than in those without (17% vs. 4.7%) (p0.015). Risk factors identified to be associated with higher mortality rate in acute UGIH include presence of re-bleeding and higher requirement of pack cell transfusion.

Conclusion : Peptic ulcer disease was the most common cause of acute non-variceal UGIR in patients with chronic renal failure. In patients with moderate to severe chronic kidney disease, acute non-variceal UGIH was associated with a greater length of hospital stay, a greater requirement of blood transfusion, a greater risk of re-bleeding and a higher rate of mortality compared to those without chronic kidney disease.

Dr. Amry Abd Rahim : Supervisor
Dr. Hj. Rosemi Salleh : Co-Supervisor

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THE PATTERN OF BODY MASS INDEX AMONG STABLE CHRONIC HAEMODIALYSIS PATIENTS : ITS EFFECT ON BLOOD PRESSURE, LIPID PROFILE AND QUALITY OF LIFE

Dr. Anilawati Mat Jelani
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : In Malaysia, 26.5% of the adult population was found to be overweight and 13% was underweight. In overall haemodialysis population in Malaysia, inclusive of stable and new patients, the reported prevalence of underweight and overweight was 14% and 29% respectively. It was not known whether the pattern of BMI among stable chronic haemodialysis patients was similar to the previous reported studies. Hence, this study was conducted to address this issue.

Patients & Methods : This was a retrospective cohort and cross-sectional study. It was conducted from June to November 2006 in six fully government sponsored haemodialysis centre in Kelantan. Patients who fulfilled our selection criteria were included in the study. Their weight, height, waist circumference, blood pressure readings, Kt/V value and lipid profile were recorded. Patients were interviewed using a set of WHOQOL-BREF questionnaire (Malay version) which has been validated earlier.

Result : In this study, the mean BMI of our patients was 22.6 ± 4.0 kg/rn of which 15.6% of patients had been underweight, 60.0% had normal weight and 24.4% had been overweight. The prevalence of metabolic syndrome among our study population was 28.8%. In this study, the only parameter that had shown significant correlation with BMI was triglyceride (b=0.89; p0.002). In addition, we found that patients with BMI more than 25 kg/m^2 were shown to have better quality of life than those with normal and low BMI.

Conclusion : The pattern of BMI among stable chronic haemodialysis patients was comparable to overall dialysis population while patients with high BMI were found to have better quality of life.

Assoc.Prof. Dr. Zainal Darus : Supervisor
Dr. Hj. Sukeri Mohamed : Co-Supervisor

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DEPRESSION AND ANXIETY FOLLOWING ACUTE CORONARY SYNDROME IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr. Fazirah Abdullah
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Depression is common following myocardial infarction and has been shown to have significant impact on patient's morbidity and mortality. The prevalence rate of depression following myocardial infarction was 35%. To date, there is no published data on depression and/or anxiety following myocardial infarction in Malaysia, hence this study was conducted to address this issue. Other objectives of the study were to identify association of sociodemographic factors and coronary artery disease risk factors with depression following acute coronary syndrome and to compare the rate of cardiac complications during admission in depressed and non depressed groups following acute coronary syndrome.

Patients & Methods : This was a cross sectional observational study conducted on acute coronary syndrome patients admitted to Hospital Universiti Sains Malaysia (HUSM). 96 subjects were interviewed using validated Malay version of Hospital Anxiety Depresion Scale (HADS) questionnaire which is a screening tool for depression and anxiety symptoms. It has 7 questions each for depression and anxiety part and each part is scored out of 21. A score of 9 and above in depression and/or anxiety parts indicates that there is depression and/or anxiety. The sociodemographic data, medical history, coronary artery disease risk factors and medical characteristics during the admission were also taken.

Results : The local prevalence of depression and anxiety following acute coronary syndrome obtained from this study were 38.5% and 42.7% respectively. The prevalence of both depression and anxiety amongst these patients was 19.8%. Percentage of cardiac complications in depressed group following acute coronary syndrome were higher than non depressed group (64.9% vs 55.9%), however the difference was not statistically significant. On simple logistic regression analysis, hypertension, anxiety and history of isehemic heart disease showed significant association with depression. On further analysis in multiple logistic regression, hypertension and anxiety remains statistically significant.

Conclusion : In conclusion, local prevalence of depression following acute coronary syndrome was comparable with previous studies. We also found that depression following acute coronary syndrome showed a statistically significant association with hypertension and anxiety. Percentage of cardiac complications also was higher among subjects with depression following acute coronary syndrome but the difference was not statistically significant.

Assoc. Prof. Zurkurnai Yusof : Supervisor
Dr. Suhairi Ibrahim : Co-Supervisor
Dr. Asrenee Abdul Razak : Co-Supervisor

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A STUDY ON THE EFFECT OF ADD-ON ROSIGLITAZONE ON THE ANKLE BRACHIAL PRESSURE INDEX OF PATIENTS WITH TYPE 2 DIABETES MELLITUS IN HOSPITAL UN! VERSITI SAINS MALAYSIA

Dr. Nazri Mustaffa
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Rosiglitazone, an oral hypoglycaemic agent of the thiazolidinedione group is used for Type 2 Diabetes treatment. Research has shown that this medication, being a peroxisome proliferator activator receptor-gamma agonist has effects beyond glycaemic control alone. Apart from improving insulin resistance, the non-hypoglycaemic effects of rosiglitazone include reduction of inflammatory markers, improvement of endothelial function, improvement in fibrinolytic activity as well as changes in cholesterol profile. This study intends to see if the non-hypoglycaemic effects of rosiglitazone translate to a clinically noticable reduction in atherosclerosis as well as improvement of fibrinolytic activity. The objectives of this study were to assess changes in surrogate markers of atherosclerotic burden via ankle-brachial pressure index measurements, the number of patients who have significant peripheral artery disease in the study, changes in the diabetic prothrombotic state via serum plasminogen activity, changes in glycaemic control via HbA_{IC} and changes in cholesterol profile by measuring total-, high density lipoprotein- and low density lipoprotein-cholesterol after rosiglitazone is added to a pre existing Type 2 Diabetes treatment regime.

Patients & Methods : A non-blinded cross-sectional cohort study was designed. 59 patients were enrolled. Patients who were rosiglitazone naïve were prescribed 4mg of oral rosiglitazone added-on to their current medication for a period of 10 weeks. Ankle-brachial pressure index, HbA_{1c}, serum plasminogen activity levels and fasting cholesterol profile were taken at the start and end of the study taken at the start and end of the study period. Patients were requested not to change their medication dose nor regime throughout the study.

Results : 48 out of 59 patients completed the study. Mean ankle-brachial pressure index was 1.06 ± 0.12 pre-, and 1.07 ± 0.13 post-rosiglitazone (p-value was 0.439). 4 patients (8.3%) had an ABPI ratio of less than 0.90 indicating presence of significant peripheral artery disease. Mean serum plasminogen activity (%) was 96.00 ± 14.77 before rosiglitazone, and 111.98 ± 15.83 after (p-value of 0.006). Initial mean HbA_{1c} (%) was 9.76 ± 2.06, and second mean was 9.25 ± 2.03 (p-value was <0.001). Mean total cholesterol (mmol/L) was 4.95 ± 1.02 before rosiglitazone and 5.32 ± 0.94 after (p0.003). Mean high density lipoprotein cholesterol (mmol/L) at the beginning was 1.32 ± 0.37 and 1.47 ± 0.41 at the end (p<0.00I). Finally, mean low density lipoprotein cholesterol (mmol/L) concentration was 2.89 ± 0.85 at the start and 3.08 ± 0.96 at the end (p 0.098).

Conclusion : This study shows that oral rosiglitazone 4mg daily significantly improves serum plasminogen activity levels, indicating

improvement in fibrinolytic activity. There is also a significant reduction in HbA rise in total cholesterol as well as high density lipoprotein-cholesterol levels in line with the findings of previous studies. The rise in ankle-brachial pressure index and low density lipoprotein-cholesterol measurements however, were not significant in this study. Not many patients had significant peripheral artery disease in this study compared to previous ones before this. However, more research is needed regarding the relation between use of rosiglitazone and atheroma reduction.

Assoc. Prof. Zurkurnai Yusof : Supervisor
Dr. Suhairi Ibrahim : Co-Supervisor
Dr. Wan Zaidah Abdullah : Co-Supervisor

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THE RELATION BETWEEN NON INVASIVE MARKERS AND USING THE FIBROTIC INDEX IN LIVER BIOPSY SPECIMEN, FROM HEPATITIS C PATIENTS, AT HOSPITAL ALOR SETAR

Dr. Razul Md Nazri Bin Md Kassim
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Liver biopsy is a mandatory procedure in the management of patients with hepatitis C virus infection, especially for staging fibrosis. We aimed, in our cross sectional study, to assess the relation of the serum biochemical markers for the diagnosis of clinically significant fibrosis(including early stages).

Patients & Methods : We assessed liver biopsy patients with detectable hepatitis C by PCR, for eligibility and took their blood sample for the biochemical test. The analysis was done on 60 patients. We devised a fibrosis index that included the most informative markers (combined With age and sex). Eleven serum markers were assessed as well as fibrosis stages: S0 no fibrosis, Si =fibrous expansion of some portal tracts ± short fibrous septa., S2=fibrous expansion of most portal tracts ± short fibrous septa, S3 fibrous expansion of most portal areas with occasional portal to portal (PP) bridging, S4=fibrous expansion of portal areas with marked bridging (PP as well as portal-central (PC), S5 marked bridging (PP and or PC) with occasional nodules (incomplete cirrhosis), S6 cirrhosis, probable or definite. Statistical analysis was done using mann whitney U test and receiver operating characteristics (ROC) curves.

Results : Mean value of ALT, GMT, aldosterone, HDL, and albumin with mild fibrosis and severe fibrosis,was82±4and 125±31,47.5±31 and 81±25,116.6±56and184± 43, 1.4± 0.3 and 0.9 ± 0.2 and, 42 ± 4 and 35 ± 3.2, respectively with a significant difference between them was (p <0.05). The area under the operating receiver characteristics showed significant accuracy for each biochemical parameters.

Conclusion : We found positive correlation between ALT, GMT, aldosterone, albumin and fibrosis stages on liver biopsy in hepatitis C patients. Serum biochemical markers have significant correlation with stages of liver fibrosis.

Supervisor : Dr. Radzi Muhammad Hassan
Co-Supervisor: Dr. Amry Abd Rahim

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THE CONTROL OF HYPERTENSION AMONG PATIENTS ATTENDING HOSPITAL UNIVERSITI SAINS MALAYSIA HYPERTENSION CLINIC.

Dr. Shaharuddin Che Kadir
MMed Medicine (Internal Medicine)

Department of Medicine,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Background : Hypertension is a common medical problem and it is associated with coronary artery disease, stroke, heart failure and renal dysfunction. However many patients still have an uncontrolled blood pressure despite antihypertensive treatment.

Objectives : This study was conducted with the primary objective of assessing the proportion of patients who achieved their blood pressure targets. The secondary objectives were to evaluate the factors associated with uncontrolled blood pressure and to determine the number of antihypertensive agents required to achieve controlled blood pressure.

Patients & Methods : A cross-sectional study of hypertensive patients attending Hospital USM hypertension clinic was conducted from April until September 2006. Patients' blood pressure, smoking history, BMI, urinalysis for protein, fasting lipid profile, renal function test and fasting blood sugar were obtained. The blood pressure was defined as controlled if < 140/90 mmHg or < 130/80 mmHg in patients with diabetes or chronic kidney disease, or < 125/75 mmHg in patients with proteinuria > lg/day.

Results : A total of 245 patients compliant to medications were recruited. Thirty four percent of them achieved controlled blood pressure (n = 83). Patients with chronic kidney disease were the majority (69.14%) among patients with uncontrolled blood pressure. Univariate analysis showed several factors were associated with uncontrolled blood pressure: older age, malay race, history of smoking; higher creatinine, uric acid, total cholesterol, triglyceride and fasting blood sugar; lower eGFR; the use of more than 2 antihypertensive agents and the use of diuretics; and the presence of diabetes mellitus, chronic kidney disease and proteinuria. However the results of multiple logistic regression analysis indicated that female gender (p = 0.001), malay race (p = 0.031), smoking (p < 0.001), eGFR (p < 0.001) and diabetes mellitus (p = 0.001) were the independent factors associated with uncontrolled blood pressure. Univariate analysis showed that patients who were on treatment with I or 2 antihypertensive agents were more likely to have controlled blood pressure than those on more than 2 drugs (p = 0.001), however, this was not statistically significant in multivariate analysis.

Conclusion : Majority of the hypertensive patients failed to achieve their blood pressure targets. The independent factors associated with uncontrolled blood pressure in our hypertensive population were female gender, malay race, smoking, eGFR and diabetes mellitus. Patients with chronic kidney disease contributed to a considerable number of patients with uncontrolled blood pressure. More intensive management of hypertension is needed to increase the proportion of patients with controlled blood pressure and to reduce the complications of hypertension.

Dr. Mohd. Sapawi Mohamed : Supervisor
Dr. Than Winn : Co-Supervisor

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CHARACTERIZATION OF THE HOMOLOGS OF A DIAGNOSTICALLY SIGNIFICANT BRUGIA MALAY! GENE (BMI7DI!I) IN WUCHERERIA BANCROFT!, LOA LOA AND ONCHOCERCA VOL VULUS

Ros Azeana binti Abdul Aziz
MSc (Microbolgy)

Department of Medical Microbolgy & Parasitology
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : An antibody-detection rapid test, BRUGIArapid, that detects IgG_4 antibodies reactive to a recombinant B. malayi antigen

(*BmR1*), is a promising tool for mapping and monitoring the areas where brugian filariasis is endemic. Field trials have revealed that *BmR1* is highly sensitive and specific in detecting microfilariaemic individuals. In sera of individuals infected with Wuchereria bancrofti the IgG_4 reactivity to BmR1 is variable, and cross-reactivity of sera from individuals infected with O. volvulus or L. loa was observed only in single cases. Due to its diagnostic significance, it is therefore important to characterize the BmRI antigen more closely. The varying degree of BmR1 recognition in other filarial infections (other than B. malayi & B. timori) raises the question whether the homologous antigen is also present in W. bancrofti (Wb-BmR1), 0. volvulus (Ov-BmRI) and L. loa (Ll-BmRI).

Methodology : In this study, the respective cDNA sequences were identified, the protein expressed and the antibody reactivities of patients' sera to the homologous recombinant antigens was studied.

Results : Web-based homology searches for homologs of Bm17DIII in W. bancrofti, O. volvulus and L. loa via BLASTN server of several DNA databases resulted in no similarity to any sequence of W bancrofti and L. loa, while for O. volvulus, there were two L_3 sequences which had a low E-value. Homology searches via BLASTP (protein databases) revealed that BmR1 protein did not have any similarity with other protein sequence. PCR was used to isolate the cDNA sequences from cDNA libraries and/or genomic DNA of W. bancrofti,O. volvulus and L. loa based on RNR & RNF primers. The 618 bp PCR products (namely Wbl170III, Ovl7DIII and LII7DIII) was then cloned into TOPO vector, sequenced and analysed using Vector NTI software and BLAST server. Wbl7DIII was found to be 100% identical to Bml7DIII, while Ovl7DIII and LI17DIII were found to be identical to each other and shared 99.7% homology with Bm17DIII. Thus the results of the web-based search for Ovl7DIII were not in agreement with the laboratory results. This study also revealed that, unlike the complete Bm170111 gene which contains an intron (and two exons), the complete Wbl70DIII gene did not possess any intron. The Ovl7DIII or LII7DIII recombinant gene was then expressed in pPROEX™ HTa/TOP10F. The MW of Ov-BmR1 or LI-BmR1 was —25 kDa and analysis by Western blot showed reactivity with sera from L. boa and O. volvolus mf+ patients and no reactivity with serum from healthy blood donor. By employing IgG the pattern of IgG recognition of all serum samples to Ov-BmRI or LI-BmRI and BmRI was found to be identical. This included weak IgG^4 reactivities demonstrated by sera from L. loa- and O. volvolus-infected patients. With respect to reactivities to other lgG subclasses, sera from O. volvulu- and L. loa- infected patients showed positive reactions (when tested with Ov-BmR1 or LI-BmRI or BmR1) only with IgG_1 and no reactivity was observed with lgG_2 or with lgG_3 Similarly, sera from individuals infected with B. malayi or W. bancrofti (active and chronically-infected patients) were positive with BmRI only for lgGl and were negative when tested with lgG_2 and lgG_3 subclasses. However, it is also noted that sera from non-endemic normals and soil-transmitted helminth infections also showed similar reactivities i.e. lgG_1 positive and lgG_2 and lgG_3 negative.

Conclusions : This study demonstrated that Bm17DII gene and its homologs in W. bancrofti, O. volvulus and L. loa are highly conserved. Recognition of the recombinant gene products (BmRI or Wb-BmRI and Ov-BmRI or LI-BmRI) by patients' sera are similar with regard to lgG_1 lgG_2 and lgG_3 but different for lgG_4 antibodies. Thus this study demonstrated that although lgG_4 antibodies to BmRI are a good infection marker for brugian filariasis, its homologs are not of diagnostic value.

Prof. Dr. Rahmah Noordin : Supervisor
Prof. Asma Ismail : Co-Supervisor

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A STUDY OF BACTERIAL VAGINOSIS IN HUSM TOWARDS A STANDARD DIAGNOSTIC METHOD

Dr. Azura binti Hussin
MMed Pathology (Microbiology)

Department of Pathology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction. Bacterial vaginosis is a common cause of vaginitis encountered in most obstetric and gynaecology clinic. It is characterized by a replacement of the Lactobacillus sp. in the vagina with a mixed and high concentrations of aerobic and anaerobic bacteria that comprises *G.vaginalis, Bacteroides spp., Mobiluncus* spp. and *Mycoplasma hominis*.The diagnosis of BV is commonly established by using clinical presentation and or microbiological tests. However, BV is often misdiagnosed when the clinical criteria are used because of its inherent subjectivity. A more objective method like the Nugent's criteria is more reliable method of diagnosis BV especially in evaluating asymptomatic population. A symptomatic BV cases among pregnant women, if left untreated may cause many complications, such as spontaneous abortion, preterm labor, premature birth and preterm premature rupture of the membranes. Due to the importance of reducing in many of the adverse events associated with BY, an appropriate screening method that is easy, simple to perform, reliable, sensitive and specific is required.

Objectives : The aims of this study are to determine the prevalence of bacterial vaginosis (BV) among pregnant women in HUSM, using the Amsel's and Nugent's criteria, to compare the agreement between the Amsel's and Nugent's criteria, and to determine the validity of the Nugent's criteria in the diagnosis of BV.

Patients & Methods : A cross sectional study was randomly conducted of pregnant women, attending Obstetric and Gynaecology Clinic in FIUSM for six months duration. The prevalence of BV was determined by the Amsel's and Nugent's criteria. The agreement of the two criteria was observed and the validity of the Nugent's criteria was evaluated using the Amsel's criteria as gold standard.

Results : We enrolled 270 pregnant women whose mean age was 30.4 (SD: 6.4). In diagnosing BV, only three had bacterial vaginosis by definitive both the Amsel's and Nugent's criteria, whereas three was positive by the Amsel's criteria and seven by the Nugent's criteria.

The prevalence of bacterial vaginosis using the Amsel' s criteria was 1.0 % (95% CI) and 2.6% (95% CI) by Nugent' s criteria. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of the Nugent's criteria for the diagnosis of bacterial vaginosis using the Amsel's criteria as gold standard was 100%, 98.5%, 42.9% and 100%, respectively. There was a moderate agreement between the Amsel's and Nugent's criteria (k = 0.594 andp = <0.001) in diagnosing By.

Conclusion : The prevalence of BV among pregnant women in HUSM by using the Amsel's criteria is slightly lower (1.0%) compared to the Nugent's criteria (2.6%). Both the Amsel's and Nugent's criteria are acceptable methods for use in the diagnosis of By. However, subtle differences exist between two methods that may limit the use of the Amsel' s criteria. In addition to its high sensitivity and specificity, the Nugent' s criteria, are more standardized, objective and simple to perform. Thus, it is highly recommended that the Nugent's criteria be used for the diagnosis of BV.

Dr. Hajjah Fauziah Hj. Mohammad : Supervisor
Dr. Adibah Ibrahim : Co-Supervisor

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COMPARISON OF TWO BIOCHEMICAL TESTS FOR IDENTIFICATION OF *ENTEROBACTERIACEAE* IN CLINICAL ISOLATES IN HUSM

Dr. Nabilah Awang @ Ismail
MMed Pathology (Microbiology)

Department of Pathology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Bacteria belonging to the family *Enterobacteriaceae* account for approximately 80% of significant isolates of gram-negative bacteria in the clinical laboratory. They are common cause of septicaemia, gastroenteritis and urinary tract infection. A relatively simple, rapid method but highly specific is the method of choice for routine identification of *Enterobacteriaceae* in diagnostic laboratory. An accurate result of bacterial identification is crucial to aid in patient's treatment and for surveillance of emerging antimicrobial resistance.

Objectives : Therefore, this study was conducted to compare the correct identification and test agreement of members of the family *Enterobacteriaceae* up to the species and genus level between conventional biochemical test (CBT) and Enterotube II (FT II) to Analytical Profile Index 20E (API 20E) as the gold standard test. Significant biochemical properties of API 20E and their test agreement were also determined.

Methodology : A cross sectional descriptive study was done in this study. A total of 204 isolates were collected from various clinical specimens from HUSM during twelve-month study period from January 2005 to December 2005. All isolates were identified by CBT, ET II and API 20E for the correct identification and their test agreement up to the species and genus level. Biochemical properties of API 20E and their test agreement were also analyzed.

Results : In this study, the correct identification rate of members of the family Enterobacteriaceae among CBT, ET II and API 20E were 82.6%, 88.7% and 95.1% respectively. Following supplemental testing, A 20E correctly identified 95.6% of the isolates. Similar results for correct identification up to the species level by the three methods (CBT, ET II and API 20E) and by ET II and API 20E were 82.6% and 94.9% respectively. The test agreement for identification up to the species level by ET II and API 20E were 91%. Similar results for Correct identification up to the genus level by the three methods were 98.5%. The test agreement for identification up to the genus level by all three methods was 87.5%. In the analysis of biochemical panels used in API 20E, positive lysine decarboxylase (LDC) test was significant (p<0.05) in *E. coli* and positive urease test was significant (p< 0.05) in K pneumoniae.

Conclusions : In conclusion, the Performance of CBT was not as good as ET II and API 20E in the identification of Enterobacteriaceae up to the species level but the CBT comparably gave excellent identification up to the genus level in 98.5% of the isolates. Therefore, to achieve a high level of accuracy in the speciation of organisms, API 20E was still considered as the gold standard test as it gave the highest correct identification rate of 95.6%, followed by ET II and CBT. ET II was better than CBT in view of its better accuracy rate, more User friendly and easy to inoculate.

Supervisor : Dr. Habsah Hasan
Co-Supervisor: Dr. Hjh Fauziah Mohd.Idris

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ANTIBACTERIAL EFFECT OF HONEY, PEPPER AND COMBINATIONS — IN VITRO

Dr. Nor Iza A.Rahman
MMed Pathology (Microbiology)

Department of Pathology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : The indiscriminate use of antibiotics has made many microorganisms develop resistance to them. This has created immense clinical problems in the treatment of infectious diseases. In addition, reliance on commercialized medicines which contain too many chemicals can become hazardous to our health. Therefore there is a need to develop alternative antimicrobial agents for the treatment of infectious diseases. Both honey and pepper had been used since ancient time for many medicinal uses and treating certain conditions including infectious diseases. The objectives of the study were to assess the antibacterial activity of honey, pepper and combinations against the test microorganisms as well as to compare the antibacterial activity between honey alone with honey and pepper combinations.

Methodology : Samples of local honey, pepper and combinations were assessed for their antibacterial activities against 118 bacterial isolates of 15 bacteria species using standard microbiology techniques, disc-diffusion and macro-dilution assays.

Results : The results indicated that out of 15 bacteria species tested, growth of only one bacteria species was inhibited (i.e.*Salmonella typhi*) by both honey and combinations of honey and pepper using disc-diffusion assay that with zone of inhibition ranged from 14 to 30 mm in diameter. There were no significant differences in susceptibility (in terms of zones of inhibition) between all groups. Variable responses within or between bacterial isolates (i.e. *Salmonella typhi*) of same species were also observed. Macro-dilution assay had showed that all the bacterial species tested had antibacterial activity to honey as well as combinations of honey and pepper with MIC values ranged from 6.25% (v/v) to 50% (v/v) with the highest activity against *Salmonella typhi*. There was no uniform response between bacterial species in terms of susceptibility to either honey or honey and pepper combinations (variable MIC values). When we compared the MIC values of honey alone with honey and pepper combinations, generally the values were similar in all tests performed by macro-dilution method against all 15 bacterial species.

Conclusion : Both honey alone as well as honey and pepper combinations showed broad spectrum antibacterial activity. However, based on this study, there was no beneficial effect of adding pepper to honey. Although there is evidence of antibacterial activity of honey, pepper and combinations in vitro, further consideration needs to be given to its application and therapeutic properties in order to optimize the use of this product in clinical and systemic infections.

Dr. Azian Harun : Supervisor
Dr. Zeehaida Mohamed : Co-Supervisor

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EVALUATION OF THE ALPHA OMEGA HIV RAPID TEST KIT FOR DETECTION OF HIV ANTIBODIES IN BLOOD SAMPLES OBTAINED FROM HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM).

Dr. Salwani bt Ismail
MMed Pathology (Microbiology)

Department of Pathology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Rapid detection of human immunodeficiency virus (HIV) infection can result in improved patient care and faster implementation of preventive measures. Serological tests such as enzyme immunoassay (EIA) and particle agglutination assay (PA) are commonly used for the screening of 1-IIV infection. However those methods are relatively expensive and are more complex to use as compared to HIV rapid tests. The latter tests are tests that are completed in less than 15 minutes as defined by WHO or in 30 minutes or less as defined by CDC. Usage of rapid test is especially important in settings where the availability of rapid HIV test results would influence medical care immediately, or HIV prevalence is high but patients are not likely to return for the results of HIV tests. One of the rapid tests is Alpha Omega HIV Rapid Test Kit. Previous evaluation of the kit in pilot studies conducted by several hospitals in Malaysia used only small number of samples; ranging from 10-100. This present study used a relatively bigger sample size for a more accurate evaluation of the test kit.

Objectives : To determine the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of the

Alpha Omega HIV Rapid Test Kit and to compare the performances of the kit in testing sera and whole blood samples.

Methodology : This is a cross sectional study. A total of 301 blood samples which consisted of sera (n2 13) and whole blood (n=88) were tested with the Alpha Omega HIV Rapid Test Kit. The sera samples consisted of HIV-positive sera (n=34) and HIV-negative sera (n=1 79). Similarly, whole blood samples also consisted of HIV-positive whole blood (n=33) and HIV-negative whole blood (n55). Positive samples for both sera and whole blood were taken from consented HIV positive patients that were inpatients of HUSM, whereas negative samples were taken from consented normal healthy volunteers and systemic lupus erythematosus (SLE) patients. Out of 179 of the HIV-negative sera, 168 samples were from normal healthy volunteer and 11 from SLE patients. Out of 55 HIV negative whole blood, 44 were from normal healthy volunteers and 11 were from SLE patients. Sera samples were collected in plain bottles whereas whole blood samples were collected in EDTA-anticoagulant bottles. HIV-Western Blot was used as a reference test for the positive samples whereas for the negative samples the reference test was MEJA Axsym.

Results : The sensitivity, specificity, PPV and NPV of the Alpha Omega HIV Rapid Test kit when tested with sera samples were 91%, 100%, 100% and 98.4% respectively. For the whole blood samples the sensitivity, specificity, PPV and NPV were 91%, 100%, 100% and 94.8% respectively.

Conclusion : Alpha Omega HIV Rapid Test Kit is a simple and rapid assay for detection of antibodies to HIV-1 and/or HIV-2 in sera and whole blood samples. The sensitivity, specificity, PPV and NPV for the sera samples were 91%, 100%, 100% and 98.4% respectively. For the whole samples the sensitivity was 91%.specificity 100%. PPV 100% and NPV 94.8%. The kit was found to give a similar result in sensitivity, specificity and PPV for both types of samples; however the NPV for whole blood samples was lower compared o sera samples, even though the specificity of the test kit both types of samples was very high, its relatively low sensitivity renders it suitable for HIV screening purpose.

Dr. Hajjah Fauziah Mohd Idris : Supervisor

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COMPARISON OF ENTAMOEBA HISTOLYTICA ANTIBODIES AND LECTIN ANTIGEN LEVELS IN THE SERA OF PATIENTS SUSPECTED WITH AMOEBIC LIVER ABSCESS (ALA) IN HUSM

Dr. Wan Nor Azilah @ Wan Nor Amilah
MMed Pathology (Microbiology)

Department of Pathology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Indirect haemagglutination assay (IHA) is one of the most widely used methods to detect *Entamoeba histolytica* antibodies. In an amoebiasis endemic area such as Kelantan, interpretation of a positive IHA result can be problematic due to the high background antibody levels. The TechLab *E*. histolytica II ELISA is a commercial kit for detection of specific Gal/GalNAc lectin antigen in stool samples, and has been reported to be able to detect the antigen in serum samples from patients with amoebic liver abscess (ALA). Thus in this study, the usefulness of the TechLab *E*. histolytica II ELISA was compared with IHA in the diagnosis of ALA. The objective of the study is to determine and compare the level of antibodies by IHA and the presence of Gal/GalNAc lectin antigens by [in the sera of suspected ALA patients.

Methodology : This is a cross sectional study involving 43 clinical or suspected ALA patients who were admitted to the surgical ward, Hospital USM, Kelantan. The diagnosis of ALA was established based on clinical symptoms and signs, ultrasound and/or CT scan results.

Clinical data of the patients were reviewed from the hospital files. The serum specimens were obtained from the patients and tested with IHA and [methods according to the manufacturer's instructions.

Results : The majority of patients in this study were Malays, males were affected more than females and the majority was in the age group of 20-59 years old. Three most common clinical signs and symptoms on presentation were fever, abdominal pain and hepatomegaly. Majority of patients were found to have single abscess located at the right lobe of liver and with the presence of leucocytosis. Of all 43 patients, 76.7% was IHA positive and only 2.3% was ELISA positive. The agreement between IHA for antibody detection and ELISA for lectin antigen detection was poor. There was no correlation between ELISA results and IHA of different antibody titers. The complication of ALA was pleural effusion occurring in 30.2% of the patients.

Conclusion : Based on the findings, the ELISA method used in this study was not sensitive in detecting amoebic antigen in serum samples from ALA patients. In addition, the results of ELISA test did not correlate with the IHA antibody titers. Therefore, the TechLab *E. histolytica* II ELISA was found not to be a useful test for serological diagnosis of ALA in HUSM.

Dr. Zeehida Mohamed : Supervisor
Assoc Prof. Dr. Syed Hatim : Co-Supervisor

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THE OUTCOME OF DYDROGESTERONE THERAPHY IN PATIENTS WITH THREATENED MISCARRIAGE-A DOUBLE BLOND PROSPECTIVE RANDOMISED CONTROLLED TRIAL IN HTAA KUANTAN, HUSM KUBANG KERIAN AND HRPZ II KOTA BHARU, KELANTAN.

Dr. Jalilah binti Abdullah
MMed O & G

Department of O & G,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objective : To evaluate the effectiveness of dydrogesterone therapy in first trimester threatened miscarriage in bringing the pregnancy successfully beyond 22 weeks of gestation.

Patients & Methods : This is a double blind prospective randomized controlled trial conducted at Hospital Tengku Ampuan Afzan Kuantan, Hospital USM Kubang Kerian and Hospital Raja Perempuan Zainab II Kota Bharu, Kelantan from 1st April 2005 till 30th September 2006. Eighty two patients with first trimester threatened miscarriage were the studied population. Group A received placebo 4 tablets stat, 1 tablet 8 hourly till symptom remit and followed by maintenance 1 tablet 12 hourly till 16 weeks of gestation. Group B received Tab dydrogesterone 40 mg stat, 10 mg 8 hourly till symptoms remit and 10 mg 12 hourly till 16 weeks of gestation. Randomization was done by computer generated block randomization. Baseline serum progesterone level was taken before commencement of treatment. The main outcome measured is whether the pregnancy ended with miscarriage or successfully continued beyond 22 weeks.

Results : Result was analysed with Chi-square and Fisher's Exact test to determine the statistical significance. The test was considered significant if p value < 0.05. Logistic regression analysis was also performed to exclude possible confounding variables. Both groups were similar with respect to age, gravida, parity, period of gestation and socioeconomic status. There was a higher percentage of patients who continued pregnancy in dydrogesterone group (87.8%) compared to placebo group (63.8%) with RR of 2.29 and 95% CI 0.06— 8.01. This is not statistically significant asp value in multivariate analysis is 0.194. (j 0.05)

Conclusion : The study shows no significant benefit of dydrogesterone therapy in reduction of pregnancy loss in patients with

first trimester threatened miscarriage (p = 0.194 in multivariate analysis).

Dato' Dr. Ghazali bin Ismail : Supervisor
Prof. Madya Dr. N. Mohd Zaki N. Mahmood : Co-Supervisor

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RANDOMISED CONTROLLED TRIAL ON INTRAMUSCULAR NALBUPHINE VERSUS INTRAMUSCULAR PETHIDINE (MEPERIDINE) FOR ANALGESIA IN LABOURING PRIMIGRAVIDA.

Dr. Aw Lin Da
MMed Medicine (O & G)

Department of O & G,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Pain is the dominant symptom of labour and is multifactorial in origin. The appropriate pain relief may influence the general course and success of labour. Opioids are the cornerstone of pain management. Despite their extensive use, little is known about their effectiveness and whether certain opioids produce fewer side effects. Pethidine is one of the most commonly used opioids for labour pain relief. However, there are many unintended effects that have been found with its prescription during labour. Nalbuphine, a synthetic agonist-antagonist opioid analgesic agent is a potentially good alternative in view of the similar efficacy and better side effects profile.

Objective : To study and compare the efficacy of 2 different types of intramuscular opiods as labour analgesia and the adverse effects to both mothers and babies.

Patients & Methods : Labouring primigravida in Labour room, Hospital Alor Star from December 2004 to March 2005 who required analgesia were randomised to intramuscular Meperidine 75mg or intramuscular Nalbuphine 20mg. Main outcome measures changes in severity of labour pain after administration of opiods, the adverse effects experienced by the mothers, the acceptability of treatment by mothers, the mode of delivery, the apgar score of baby and the need of opiod antidote for resuscitation of the baby.

Results : A total of 480 patients were randomised, 240 received intramuscular Meperidine and 240 intramuscular Nalbuphine. Efficacy of the opiods was similar but patients who received Meperidine reported statistically significant (p < 0.05) adverse effects. There were no difference in the mode of delivery and 5 minute apgar score between the two groups but more babies in the Meperidine group needed resuscitation with opioid antidote at birth (43.3% versus 22.8%)

Conclusion : Intramuscular Nalbuphine seems to be the better choice of labour analgesia in our study group.

Prof. Mohd.. Shukri Othman : Supervisor
Prof. Madya Dr. N. Mohd Zaki N. Mahmood : Co-Supervisor

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A STUDY OF PREVALENCE AND FACTORS ASSOCIATED WITH CAESAREAN HYSTERECTOMY IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr. Yusmadi Abdullah
MMed Medicine (O & G)

Department of O & G,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Obstetric hysterectomy is done to safe patient's life in case of uncontrolled bleeding during caesarean section. It is also done as elective for case of cervical cancer. Caesarean hysterectomy was defined as one performed for the haemorrhage unresponsive to other treatment following caesarean section including for uterine rupture. Wan Abu Bakar (1993) showed the percentage of caesarean hysterectomy was 0.3% (1: 1926 total of delivery). During that study period, 24 cases of caesarean hysterectomy was reported in which 18 patients had underwent total hysterectomy and 6 patients underwent total hysterectomy. The study also showed the major indication for the operation was uterine atony.

Objectives : To determine the prevalence and the associated factors for caesarean hysterectomy. The complications of the operation also were identified.

Patients & Methods : This study was conducted at Hospital Universiti Sains Malaysia from January 1996 till December 2005. All patients who underwent caesarean hysterectomy in the study period were included in the sample size, included patients with uterine rupture. The patient who underwent postpartum hysterectomy were also recorded as to compare with caesarean hysterectomy. Patient's information were obtained from the record office. The permission was obtained from Pengarah Hospital Universiti Sains Malaysia. The study was ethically approved from the HUSM ethical committee (Number 170.4(5)).

Results : There were 65 cases of caesarean hysterectomy was done through out the study period where the total number of deliveries were 70 842 deliveries. Therefore the caesarean hysterectomy rate is 0.9 1000. Most frequent indications were placenta accreta (46.2 %, 30 out of 65), uterine atony (33.8 %, 22 out of 65), uterine rupture (16.9 % , 11 out of 65) , carcinoma of cervix (1.5 % , 1 out of 65). From this study 44.6% (29 out of 65) had history of previous caesarean section and 33.8% (22 out of 65) had undergone uterine curettage. The number of caesarean deliveries and ERPOC were increasing trend and increased the risk of placenta accreta proportionally. Fifty three (81.5%) of the hysterectomy cases were total hysterectomy and twelve (18.5 %) of the cases were subtotal hysterectomy. In this study, 18.5% (12 out of 65) of the patients complicated by coagulopathy and 16.9% (ii out of 65) had febrile illness. 9.2% (6 out of 65) had bladder injury and one patient developed complicated by amniotic fluid embolism.

Conclusion : The prevalence of caesarean hysterectomy was 0.92 per 1000 deliveries. The rate of the caesarean hysterectomy is comparable with other studies. Placenta accrete was the most common indication for caesarean hysterectomy. The most common complication of the operations were and coagulopathy (16.9%) and febrile illness (9.2%). The limitation of the study was improper documentation of the cases in the patient's folder and some of the informations were missing.

Dr. Mohd. Pazudin : Supervisor
Prof. Madya Dr. N. Mohd Zaki N. Mahmood : Co-Supervisor
Prof. Mohd. Shukri Othman : Co-Supervisor

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VISUAL IMPAIRMENT AND ANTERIOR SEGMENT ABNORMALITY AMONG PRESCHOOL CHILDREN IN KOTA BHARU

Dr Adil Hussein
MMed (Opthalmology)

Department of Opthalmology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objectives : This study was designed to determine the prevalence of visual impairment and anterior segment abnormality among preschool children aged 4 to 6 years old from Kota Bharu district.

Patients & Methods : Five hundred thirty six (536) students from thirteen kindergartens in Kota Bharu district were included in this study. Visual acuity was assessed using various visual acuity charts based on child's age and decreasing order of cognitive ability. Anterior segment

examination using surgical loupe and torch light was performed. Hand-held autorefractometer was used to detect refractive error.

Results : 84% students were identified as having visual impairment (vision 6/12 or less). The most common cause was due to refractive error (7.3%), corneal causes (0.7%), amblyopia (0.2%), and cataract (0.2%). Among refractive error, myopia was more common (4.3%) compared to hyperopia (2.8%). 8.0% noted to have ocular and anterior segment abnormalities. Our study had shown a significant association between type of refractive error and age and gender. Older children were found to have more myopia while hyperopia was noted in younger children. Female students have a higher prevalence of myopia as compared to male students.

Conclusion : Visual impairment is a common problem in children with refractive error being the most important cause. Without early intervention, it will affect the child's learning process and may retard the physical and emosional development. Anterior segment abnormality can cause other serious complication if left untreated. Early screening and intervention only can prevent those problems. We can conclude that there is a need for a good and reliable vision-screening programme among preschool children so that any vision problems will be detected and treated early.

Assoc. Prof. Dr. Mohtar Ibrahim : Supervisor
Dr. Wan Hazabbah Wan Hitam : Co-Supervisor

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THE PREVALENCE OF REFRACTIVE ERROR AMONG MALAY SCHOOL CHILDREN AGED 13 TO 16 YEARS OLD IN KOTA BHARU KELANTAN

Dr Azhany Yaakub
MMed Medicine (Opthalmology)

Department of Opthalmology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objectives : To detennine the prevalence of myopia and the associated factors in Malay school children age 13 to 16 years old in Kota Bharu District.

Patients & Methods : A cross sectional study was conducted among Malay school children, age ranging from 13 to 16 year old. Seven out of 36 secondary schools in Kota Bharu District were randomly selected. Written consent was obtained from parent prior to examination. Visual assessment includes visual acuity, ocular motility, external eye examination and direct flinduscopy were conducted at the selected schools. Noncyclopegic automated refraction using Retinomax Nikon was performed to those students who had visual acuity of 20/40 or less. Direct questionnaires regarding student's background and near work activity such as time spend for reading and writing , and also watching television were also obtained from the students.

Result : A total of 929 Malay students aged 13 to 16 years old were recruited. The prevalence of visual impairment was 15.3% and refractive error was the major cause (93.6%). Myopia (-0.50D or less) was found in 979% of students with refractive error and gave the prevalence of 14.1%. No hyperopia noted in this study. The uncorrected refractive error was 59.4%. Fifty one students were unaware of their visual problems. Based on multivariate study analysis, there was significant association of refractive error with female gender (p = 0.01), positive family history of refractive error among sibling (p < 0.01) and parental income (p=O.038).

Conclusion : Although the prevalence of myopia (14.1%) among Malay teenagers aged 13 to 16 years old in Kota Bharu District almost similar to other reported studies but higher number of them was uncorrected (59.4%). Visual screening and health education should be emphasized to overcome this problem.

Dr. Raja Azmi Mohd.Nor : Supervisor

Assoc.Prof. Dr. Syed Hatim Nor : Co-Supervisor

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A STUDY ON THE EXPRESSION OF HLA-DR ON CONJUNCTIVAL EPITHELIAL CELL IN PATIENTS TREATED WITH TOPICAL LATANOPROST AS ADJUNCTIVE THERAPY AND ITS ASSOCIATION WITH PROSTANOID (FP) RECEPTOR POLYMORPHISMS

Dr. Cheong Min Tet
MMed Medicine (Opthalmology)

Department of Opthalmology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction: Topical antiglaucoma medications are known to cause subclinical inflammation on the ocular surface which is postulated to result in filtering bleb scarring and subsequent filtration surgery failure. The difference in subclinical response among patients on antiglaucoma treatment had been attributed to the type of drug, the number of drugs used and genetic variants.

Objectives : To compare the subclinical inflammation on the conjunctival surface epithelium in patients on topical latanoprost 0.005% as an adjunctive treatment to timolol 0.5% with patients on timolol 0.5% as monotherapy and to determine the role of polymorphism of prostaglandin F receptor (PTGFR) gene in subclinical inflammation.

Patients & Methods : Patients who are on topical timolol 0.5% and met the selection criteria were selected. Patients who had poor control of glaucoma were started on latanoprost 0.005% as adjunctive therapy (group L) whereas patients with good glaucoma control were continued with their timolol treatment (group T). Impression cytology of the conjunctiva was taken from both groups at baseline and after 3 months of treatment. The changes that occurred between the first and second conjunctival impression cytology in both groups were analyzed for HLA-DR expression using flow cytometry. The expression of HLA-DR was also compared to the polymorphisms of PTGFR gene to look for possible association.

Result : Fifty-five glaucoma patients who were on topical timolol 0.5% were included in this study. 30 patients were in group L and 25 patients in group T. There was significant increase in HLA-DR expression 3 months after starting latanoprost as adjunctive therapy in group L (p=O.OO) whereas there was no significant change in group T (p=O.l4). There was no association found between novel SNP and subclinical inflammation (p=1 .00).

Conclusion : Latanoprost 0.005% as an adjunctive treatment to timolol 0.5% was found to increase subclincial inflammation on the conjunctival epithelial surface even after 3 months of treatment. There was no association found between nSNP of PTGFR gene and subclinical inflammation in this study.

Dr. Liza Sharmini Ahmad Tajudin : Supervisor
Dr. Zilfalil Alwi : Co-Supervisor
Wan Hazabah Wan Hitam : Co-Supervisor

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A STUDY ON THE CAPABILITY OF FREQUENCY DOUBLING PERIMETRY IN THE DETECTION OF VISUAL FIELD ABNORMALITIES IN PRIMARY OPEN ANGLE GLAUCOMA PATIENTS.

Dr. Norfadzillah Abd Jalil
MMed Medicine (Opthalmology)

Department of Opthalmology,

School of Medical Sciences, University Sains Malaysia, Health Campus, Kelantan, Malaysia.

Introduction : Frequency Doubling Perimetry (FDP) has become a more widely used technique for both screening for glaucoma patients and follow up of glaucomatous field loss. It is thought to be sensitive to glaucomatous visual field loss because it tests a sparse population of retinal ganglion cells (M cell) which comprise approximately 10% of entire retinal ganglion cells. Therefore it is superior in the detection of early visual field loss in glaucoma patients than other present conventional methods.

Objective : To determine the capability of FDP in the detection of visual field abnormalities in the primary open angle glaucoma (POAG) patients.

Patients & Methods : A prospective, comparative, cross sectional study was carried out. A total number of 150 POAG patients underwent both FDP in screening and threshold mode 30-2 and Humphrey Visual Field (HVF) 30-2 tests in Eye clinic Hospital Universiti Sains Malaysia (HUSM). All patients had a comprehensive ophthalmology assessment including visual acuity, intraocular pressure, cup-disc-ratio measurement and anterior chamber angle assessment. Data analysis including sensitivity, specificity, area under the receiver operating characteristic (ROC) curve and kappa agreement between FDP and HVF was performed using SPSS system version 12.0.

Results : Data from 1 17 POAG patients were analyzed following inclusion, exclusion criteria and reliability of the visual field testing. For FDP in screening mode, when "at least I missed point was used as the definition for abnormal FDP, the sensitivity was high between 92.2% to 96.2% and specificity was between 14.3% to 19.3%. When " 2 or more missed points", was used as definition for abnormal visual field, the sensitivity was 89.5% to 95.0% and specificity between 29.0% to 35.7% was achieved. For FDP in threshold mode and HVF with various definitions for abnormal visual field, the sensitivity was between 83.5% to 100% and specificity between 0.0% to 50.0%. Kappa value for FDP and HVF was between 0.074 to 0.341 which showed poor to slight agreement.

Conclusion : In this study, FDP showed high sensitivity but low specificity in the detection of visual field abnormalities among POAG patients. The new classification for severity of glaucoma with Glaucoma Scoring System 2 (GSS2) and Frequency Doubling Technology Scoring System 2 (FDT SS2) was able to provide immediate and reliable classification for both severity and characteristic of VF defect. Kappa value of poor to slight agreement was obtained between FDP and HVF.

Dr. Bakiah Shaharuddin : Supervisor
Wan Hazabah Wan Hitam : Co-Supervisor

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A COMPARATIVE STUDY OF ACCOMMODATIVE POTENTIAL AFTER INTRAOCULAR LENS IMPLANTATION

Dr. Wan Norliza Bt. Wan Muda
MMed Medicine (Opthalmology)

Department of Opthalmology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Presbyopia is a physiological progressive loss of accommodative amplitude. It remains unsolved and an important challenge in Ophthalmology. In pseudophakic eye, loss of accommodation also remains unsolved. Thus, various newer surgical efforts were invented in order to restore the missing accommodation in pseudophakic eye.

Objective : To compare accommodative potential, the best corrected distance visual acuity and best corrected near vision after intraocular lens (IOLs) implantation following phacoemulsification among age-related senile cataract patients aftending ophthalmology clinic in Hospital Raja Perempuan Zainab II (HRPZ II), Kota Bharu and Hospital University Sains Malaysia, Kubang Kerian, Kelantan.

Patients & Methods : A total of 82 eyes of 82 patients were randomized to receive either ThinOptX PCIOL (n= 41) or SN60AT PCIOL (n= 41). Patients were selected according to the inclusion and exclusion criteria. At 2 months postoperative period, patients were assessed for the best corrected distance visual acuity, best corrected near vision and accommodative potential assessment by either subjective or objective methods. Comparison of means of each parameter was made between these two IOLs. Data was analyzed by either Chi- square or Independent t test with p < 0.05 was considered significant. The correlation either between Anterior chamber depth (ACD) shift and accommodative amplitude or age was tested.

Result : The best corrected distance visual acuity and best corrected near vision in both lOLs group were almost similar QD>0.05). Accommodation assessment by either objective or subjective methods revealed no significant result except for ACD difference after cycloplegic application (p 0.015). More ACD shift was noted in ThinOptX group (0.45 ± 0.49) as compared to SN6OAT group (0.22 ± 0.28) with a statistically significant mean difference of 0.238. The ACD shift in ThinOptX was equal to 0.54 diopter of accommodation. However no significant correlation was found either between ACD shift with age or between ACD shift with accommodative amplitude.

Conclusion: Postoperative visual performances in both JOLs were almost similar. Neither ThinOptX nor SN6OAT showed significant accommodative potential at 2 months postoperative period.

Supervisor   :   Dr. Mohtar Ibrahim
Co-Supervisor: Wan Hazabah Wan Hitam

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A STUDY OF THORACIC PEDICLE MORPHOLOGY (T1-T12) OF THE NORMAL MALAY POPULATION TREATED IN HOSPITAL UNIVERSITI SAINS MALAYSIA USING COMPUTED TOMOGRAPHY

Dr. Liau Kai Ming
MMed Medicine (Orthopaedics)

Department of Orthopaedics,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Previous studies have shown a significantly smaller thoracic pedicular parameters in the Asian population compared to Caucasian population. Currently used thoracic transpedicular screw size were based on Caucasian studies. As the thoracic pedicles are small in size and in close proximity with neurovascular structures even in Caucasian population, they are more so in the Asian population. The margin of safety in the placement of thoracic transpedicular screw in Malaysian population therefore needs to be defined.

Objectives : To quantify thoracic pedicular dimensions and to determine the margin of safety in the placement of thoracic transpedicular screw in the Malay population. A cross sectional study of thoracic pedicle morphometry (Ti to T12) of Malay patients who were treated in University Sains Malaysia Hospital.

Patients & Methods : Ti to Tl2 vertebral pedicles were studied in 180 patients (90 male and 90 female) who had undergone computerized tomographic scan for various lung pathology. The age range was 18 to 80 years old. The following parameters were studied: 1)Transverse outer pedicle diameter, 2) Transverse inner pedicle diameter, 3) Transverse pedicle angle, 4) Chord length, 5) Pedicle length and 6) Pedicle cortical thickness. The data obtained were statistically analyzed using paired T-test to determine differences between right and left side. Differences between male and female patients were tested using independent T test. The mean of transverse outer pedicle diameter, chord length and transverse pedicle angle of the current study were

compared with published Western and Asian studies.

Results : There were significant differences between male and female patients in all the parameters measured except for transverse pedicle angle. Female patients have significantly smaller dimensions in all the parameters measured in almost every level. Transverse outer pedicle diameter was least at the level of T4 for both male and female patients; 4.56 mm and 3.95 mm respectively; and widest at the level of Ti; 8.42 mm and 7.56 mm respectively. Transverse outer pedicle diameter of less than 5.5 mm were commonly seen at T4; 8 8.9% (male) and 97.8% (female) followed by T5, T6, T7, T8, T9 and T3. More than 50% of patients have TOPD of less than 5.5 mm from T3 to Tb, A significant percentage of patients have diameter of less than 4.5 mm from T4 to T7; ranging from 60% to 82.2% in female patients and 2 1.1% to 5 1.1% in male patients. Chord length was largest at T8 (40.03 mm for male, 37.30 mm for female) and smallest at Ti (34.71 for male, 32.21 mm for female). Medial cortex was 50% thicker than lateral cortex at most levels. Both cortices were significantly smaller in female patients. Transverse pedicle angle was widest at Ti (27.9°) and less than 5° from T7 to T12.

Conclusion : Transverse outer pedicle diameter which is the limiting factor in transpedicular fixation was significantly smaller in females compared to males at every level. More than 50% of both the male and female patients have TOPD of less than 5.5 mm from T3 to Ti 0. These results suggest that 4.5 mm screw is not suitable for the majority of Malay patients particularly in the female population where more than 90% of them have TOPD of less than 5.5 mm at mid-thoracic level (T4 to T7). Chord length was largest at T8 (male, 40.03 mm; female, 37.30 mm) and smallest at Ti (male, 34.71 mm; female, 32.21 mm). The safe screw length which is suitable for our population range from 30 to 35 mm. None of the patients in this study could accept a 40 mm screw.

Dr. Mohd. Imran Yusof : Supervisor
Dr. Mohd Shafie Abdullah : Co-Supervisor

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CHONDROCYTE CULTURE FROM ARTICULAR CARTILAGE OF DEGERATED KNESS IN HUSM

Dr. Nawaz Hussain Bin Mohamed Amir
MMed Medicine (Orthopaedics)

Department of Orthopaedics,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : HUSM tissue culture lab was set up in the year 2001 . We conducted this study to see our ability to conduct chondrocyte culturing in this lab . Articular cartilage culture from degenerated knees of elderly patients was originally thought to be senescent and not good for culture. However there was one recent study showing a potential growth in these type of cartilage[26]. Thus we would like to know whether the result is reproducible in our lab.

Methodology : We conducted a study for cartilage culture using modified Brittberg procedures. were taken from patients undergoing Total Knee Replacement surgery for osteoarthritis and were collected and transported under sterile technique. These samples were harvested from 10 patients age ranging from 58 years old to 7lyears old. The cartilage weight harvested were between 300-500 mg and subsequently cultured in the tissue lab. Cell number and quality were assessed using standard method.

Results : Initial number of cells obtained from the cartilage were between 240 000 to 360 000 cells and we managed to multiply the cells at average 9.36 times to produce cells numbering from 1.40 million to 3.48 million after 2 passages. The characteristic of cells were similar to the known chondrocyte morphology on H&E , Safranin 0 and Immunohistochemical stain and there is neither evidence of metaplasia nor infection encountered.

Conclusion : HUSM tissue lab and the method of chondrocyte culturing used in study is safe and suitable for chondrocyte culture. Cartilage from patients age ranging from 58 to 71 years old with degenerated knees can be grown to produce significant number of cells with quality almost similar to the young cartilage.

Dr. Abd.Razak Sulaiman : Supervisor

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ENDOSCOPIC FINDINGS AND EVALUATION OF MOLECULAR METHOD IN DETECTING FUNGAL AETIOLOGY IN CHRONIC RHINOSINUSITIS

Dr. Shahrul Bin Hitam
MMed Medicine (Otorhinolaryngology-Head And Neck Surgery)

Department of Orthopaedics,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Chronic rhinosinusitis (CRS) is an inflammatory disorder with numerous predisposing factors, including genetics, pollution, anatomic anomalies, bacteria and fungus. The rate of fungi detection in CRS patients has been found to vary widely from 6% to 93% of cases (Ponikau et al., 1999). Fungal cultures frequently show no growth, or else more than one fungus is identified, or easily gets contaminated. Using a polymerase chain reaction (PCR) based method, however, increases the detection rate. This method is thought to be more sensitive and reliable for detecting fungi than a standard culture method. Therefore, in this study we are comparing these two methods in patients with CRS and in normal population using nasal lavages.

Objective : To evaluate the findings of PCR method in comparison with standard fungus culture method, and to determine the sensitivity and specificity of PCR in detecting fungal aetiology in chronic rhinosinusitis patients.

Patients & Methods : A cross-sectional study was carried out in Otorhinolaryngology clinic HUSM from January 2006 till September 2006. Thirty one patients with CRS and twenty six normal controls were included in this study. After filling all the patient's particulars, selected patients were examined by using a 0 degree Karl Storz nasoendoscope and findings were recorded. Intraoperatively, both nostrils of the subjects were decongested using 10% cocaine for 15 minutes after which sterile saline was used to clean up both nostrils. Antral wash-out was done using sterile saline and the return was collected and sent for fungus culture and PCR analysis.

Results : The fungal pathogen was identified in 11 of 31 samples (3 5.5%) of CRS but none (0%) from the normal volunteers by conventional methods. PCR detected 19 of 31 samples (61.3%) of CRS and 23.1% (6/26) of normal volunteers. A statistical diagnostic test revealed that PCR has a sensitivity of 90.9%, and a specificity of 55% to detect fungal etiology in CRS. The predictive value was 52.6% and a negative predictive value was 91.6%. There was an association between atopy and fungal infection in CRS patients (p<0.05), but there was no association between presence of nasal polyp and fungal infection in CRS patients (p>0.05) using culture method.

Conclusion : PCR is a rapid, sensitive and a useful method in detecting fungal etiology in CRS. Nevertheless, the mere presence of fungi does not enough to prove its pathogenesis in CRS. Therefore, we believed that a combination of both culture and PCR techniques will improve the management of CRS and allergic fungal rhinosinusitis (AFRS).

Supervisor   :   Dr. Shamim Ahmed Khan
Co-Supervisor: Assoc.Prof. Dr. M.Ravichandran

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CEPHALOMETRIC ANALYSIS OF SNORING AND

NON-SNORING CHILDREN

Dr. Zamzil Amin Bin Asha'ari
MMed Medicine (Otorhinolaryngology-Head And Neck Surgery)

Department of Orthopaedics,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objectives : The study aimed to comprehensively evaluate the cephalometric features of children with and without snoring, and to elucidate the relationship between cephalometric variables and snoring preponderance.

Methodology : This was a cross-sectional study in the Ambulatory Care Centre, Hospital Kuala Terengganu. Snoring was assessed using a sleep behaviour questionnaire (Berlin Questionnaire). Thirty snoring and thirty non-snoring children aged 7 to 15 years were chosen via simple random sampling. The lateral cephalometric radiographs were analysed using computer software VixWin2000. Seventeen parameters consisting bony, soft tissue and angular measurements were recorded. The independent t-tests were used to analyze the data. The calculations performed using SPSS (Statistical Package for the Social Sciences; version 12).

Results : Snoring children manifested a significantly narrower airway at the level of soft palate and oropharynx, more inferiorly positioned hyoid, longer vertical airway length from posterior nasal spine to the base of epiglottis, more protruding maxilla and anterior-posterior discrepancy of the maxilla and the mandible. The statistical test has proven that there were significant cephalometric features between snoring and non-snoring children.

Conclusion : Snoring children appeared to present craniofacial factors that differ from those of non-snoring children.

Supervisor   :   Dr. Suzina Sheikh Abdul Hamid
Co-Supervisor: Assoc. Prof. Dr. Din Suhaimi Sidek

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DEMOGRAPHIC PROFILE OF CHILDREN WITH NEPHROTIC SYNDROME IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr. Nik Mat Bin Shuib
MMed Medicine (Paediatrics)

Department of Paediatrics,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Steroid is still the mainstay therapy for nephrotic syndrome and up to 70% of children had frequent relapses or steroid dependent. But some of the cases are resistant to steroid therapy. Immunosuppressive drugs, such as cyclosporine A, cyclophosphamide, chiorambucil and levaniisole have proved effective as steroid-sparing agents. Cyclosporine was first started in our hospital HUSM (Hospital Universiti Sains Malaysia) in 1996 for steroid resistant NS (nephrotic syndrome) following renal biopsy. There were no published data from locally regarding the demographic profile of the children with nephrotic syndrome, the outcome, side effect and prognosis toward development of renal failure in children with NS treated with cyclosporine.

Objectives : To describe the demographic data of children with nephrotic syndrome treated in HUSM. To determine common side effect that are related to the use of cyclosporine and development of renal failure in children with nephrotic syndrome treated with cyclosporine.

Methodology : This was a retrospective study in which all children with NS below 15 years old were reviewed. All the results were analyzed using Statistical Package for the Social Sciences Programmed (SPSS) for Window version 12.0. For each case, demographic data, renal biopsy results, respond and side effect were presented by

percentage, median and interquarter range. Friedman test were used to assess differences between repeated continuous variables. Statistical significance was inferred at p <0.05.

Result : There were 83 children's with nephrotic syndrome on treatment and follow up at HUSM. These figures give about 0.48% of the total admission of paediatric medical cases to HUSM during study period. The mean age at presentation was 6.39 (+SD3.41, years. Children with steroid sensitive nephrotic syndrome occurred in 85.5% (n=71) compare to children with steroid resistant nephrotic syndrome occurred in 14.5% (n12). Relapse occurred in 63.9% of all NS children (n=53) and 36.1% of children (n had no relapse. There were 57.7% of children (n=4 1) with SSNS (steroid sensitive nephrotic syndrome) experience relapse and 42.3% of these group of children (n=30) had no relapse. Cyclosporine has been used in 21.6% [95%CI (12.6%, 30.7%)] of NS children (n=18) and 66.7% (n12) of the children were due to steroid resistant and 33.3% (n=6) of the children were due to steroid toxicity. Side effects noted in this study were gum hypertrophy 55.6% (n10), hirsutism 16.7% (n=3) and renal impairment 16.7% (n=3). There were 27.8% (n=5) of these children, free of any side effects. There were 14 out of 18 children had hypertension before cyclosporine and 12 of them still noted to have hypertension after cyclosporine, 2 children loss follow up and 4 children had no hypertension before or after cyclosporine. There were 56.0% children with normal renal function in steroid resistant nephrotic syndrome and 60.0% children with normal renal function in steroid toxicity NS at the end of the study over the period of 5 years (60 months).

Conclusion : Majority of the children with nephrotic syndrome treated in Hospital Universiti Sains Malaysia were steroid sensitive. Cyclosporine had been used in case of steroid resistant nephrotic syndrome and steroid toxicity nephrotic syndrome. Findings from our study found that cyclosporine is a safe drug and could be considered in the treatment of children with steroid resistant or steroid toxicity nephrotic syndrome.

Assoc. Prof. Dr. N. Zainal Abidin bin N. Ismail : Supervisor
Dr. Noorizan bt Abdul Majid : Co-Supervisor

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A PROSPECTIVE CROSS-SECTIONAL STUDY OF VACUUM-ASSISTED CLOSURE (VAC) THERAPY IN HOSPITAL UNIVERSITI SAINS MALAYSIA

Dr. Ng Hian Chan
MMed Medicine (Plastic Surgery)

Department of Plastic Surgery,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Large soft tissue wounds present significant challenge for the health care providers. Various approaches have been advocated in managing these wounds. Vacuum-assisted closure (VAC) therapy utilized negative pressure to remove interstitial fluid, increase granulation tissue formation and prepare the wound bed for final wound closure.

Patients & Methods : This is a prospective cross-sectional study of patients treated with VAC therapy from December 2001 to 31 December 2005. The objectives of the study are to determine the outcome and complications of VAC therapy in Hospital Universiti Sains Malaysia. The demographic data, wound dimension, outcome and complication of Vacuum-assisted closure are recorded.

Result : A total of 59 patients with problematic wounds were treated using VAC therapy over the 4-year period. The five main indications for VAC therapy were traumatic wounds (31%), pressure ulcers (25%), post surgical wounds (22%), infective wounds (2 0%) and chronic venous ulcer (2%). The mean duration of VAC therapy was 11.8 days (SD ± 8.3). There were significant reduction in wound length and wound width of 2.2 and 1.4 cm respectively (p 0.000). There was no significant

reduction in wound depth after VAC therapy. Sixty six percent of patients had favorable outcome of VAC therapy and 75% of patients had successful surgical wound closure after VAC therapy. The only factor that significantly affects the outcome of VAC therapy was the indications for VAC therapy (p = 0.026).

Conclusion : When VAC therapy was used to treated pressure ulcers, it was associated with more unfavorable outcome. The complications occured in 17% of the patients but were minor and resolved once the VAC therapy was discontinued. As a conclusion, VAC therapy was found to be useful as an adjunct in managing large traumatic wound and infective wounds.

Prof. Ahmad Sukari Halim : Supervisor
Dr. Ananda Dorai : Co-Supervisor

THE EFFECT OF VITAMIN E ON BASIC FIBROBLAST GROWTH FACTOR LEVEL INHUMAN FIBROBLAST CELL CULTURE

Dr. Shawaltul Akhma bt Harun Nor Rashid
MMed Medicine (Plastic Surgery)

Department of Plastic Surgery,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Cosmetic products that contain vitamin E have not been proven effective in the treatment of scars. Since vitamin F is a major lipid soluble antioxidant in skin, it has been thought that it can speed healing and improve the cosmetic outcome of wounds. Tocotrienol is a class of vitamin E analogs. Although the absorption mechanisms are essentially the same for all vitamin E analogs, tocotrienols are degraded to a greater extent than tocopherols. Basic fibroblast growth factor (bFGF) is angiogenic and effective in down-regulating excess collagen production suggesting a potential role in collagen remodeling during wound healing. It is possible to alter the growth factor profile of a wound either by adding or by blocking the actions of growth factors. Aberrant wound healing may arise from a local overproduction or insufficiency of certain growth factors. Hence we may be able to manipulate the process of wound healing.

Objectives : The purpose of this study is to evaluate the effectiveness of Tocotrienol Rich Fraction (TRF) in altering the level of basic fibroblast growth factor in human fibroblasts.

Methodology : We also undertake to determine the difference of bFGF level production according to time and various concentration of TRF in this study. In this in vitro mode!, normal human fibroblasts were propagated in one percent bovine serum and treated with 0, 30, 60, 100, 120, 180, 200 and 24 Tocotrienol Rich Fraction for 3,24, 48 and 72 hours. Cells were used from 5th to 8th passage and seeded on 24—well plate trays at a concentration of 6 x 10⁴ cells per milliliter. Levels of bFGF in the supernatants were determined by Enzyme-Linked Immunosorbant Assay (ELISA).

Results : This study has demonstrated that TRF stimulated bFGF production by fibroblast. The maximum effect was evident in the first 24 hours of culture. Cells treated with higher concentrations of TRF produced higher levels of bFGF but the rise of bFGF level between the different concentrations of TRF was not statistically significant. However, the viability of fibroblasts was reduced when higher concentrations of TRF were used. In conclusion, bFGF production by fibroblasts can be stimulated by different concentrations of TRF.

Conclusion : The effect of TRF on cell viability is dose-dependent; higher concentration can induce cell death. Methods that increase bFGF may decrease aberrant scar formation by inhibiting excess collagen deposition as well as by increasing collagen degradation.

Prof. Ahmad Sukari Halim : Supervisor
Dr. Ananda Dorai : Co-Supervisor

EVALUATION OF CHANGES OF THE MEDIAN NERVE IN DIABETIC HAND NEUROPATHY USING HIGH RESOLUTION ULTRASOUND.

Dr. Bashiron Jamaludin
MMed Radiology

Department of Radiology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Diabetes Mellitus (DM) is a disease with debilitating complications. One of the common complications is neuropathy. Prevalence of neuropathy varies depending on the test used and its prevalence approaches 50% in diabetic of more than 25 years.

Objectives : The purpose of this study is to determine the proportion of DM type 2 patients with peripheral hand neuropathy attending the Diabetic Clinic Hospital USM, Kubang Kerian, Kelantan. The association of age, sex, duration of DM, body mass index (BMI), HbAlc, random blood sugar (RBS) and fasting blood sugar (FBS) with diabetic hand neuropathy is also evaluated. Changes in the cross sectional area of the median nerve between DM patients with hand neuropathy and without hand neuropathy was also studied.

Patients & Methods : This is a cross sectional study over 13 months (September 2005 — September 2006) A total of 50 DM type 2 patients were studied which comprised of 19(38%) DM patients with hand neuropathy and 31(62%) DM subjects without hand neuropathy. The patients were analyzed by modified Michigan Neuropathy Screening Instruments (MNS1) to diagnose the presence of neuropathy. Patients with score of 2 were classified as having hand neuropathy. Possible associated factors with hand neuropathy as mentioned above were taken. Measurements of median nerve were taken at 3 levels; distal radio-ulnar joint, proximal carpal tunnel (pisiform) and distal carpal tunnel (hamate). Cross sectional area (CSA) of median nerve was calculated based on these measurements.

Results : The proportion of subjects with neuropathy was 3 8.0%. The associated factors were analysed using multiple logistic regression and only FBS was found to have significant relationship with diabetic hand neuropathy. Mean CSA area of the median nerve in patients with diabetic hand neuropathy was 9.7mm (2.12) and mean CSA of median nerve in subjects without hand neuropathy was 11.5mm (2.33). The difference was statistically not significant with *p*- value of 0.056.

Conclusion : CSA of the median nerve is smaller in subjects with hand neuropathy tcompared to subjects without hand neuropathy but statistically no significant difference was found. Sonography of median nerve is a promising tool in diagnosis of hand neuropathy.

Dr. Mohd Ezane Aziz : Supervisor
Dr. Harmy Mohd. Yusoff : Co-Supervisor
Dr. Tengku Norbanee : Co-Supervisor

THE PREVALENCE AND ASSOCIATED FACTORS OF INTRACRANIAL LESIONS ON MRT AND THE ACCURACY OF FLAIR SEQUENCE IN PATIENTS WITH HEADACHE BUT NO NEUROLOGICAL DEFICIT.

Dr. Wan Daizyreena binti Wan Jaafar
MMed Radiology

Department of Radiology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objectives : The objectives of this study were to determine prevalence and associated factors of intracranial lesions on MRI

examination and the accuracy of FLAIR in detecting intracranial lesions in patients with headache but no neurological deficit.

Patients & Methods : A retrospective and prospective cross-sectional study was performed over 51 months from 1st June 2002 until 30t September 2006. One hundred and forty-three patients with headache but no neurological deficit aged 13 years old and above who had underwent routine MRI examination of brain in Hospital University Sains Malaysia were included into this study. For each case, FLAIR sequence and complete brain series were reviewed separately at different times by two radiologists.

Results : Prevalence of intracranial lesions on complete MRI sequence was 18.9% (95% CI: 0.06, 0.32). The sensitivity for FLAIR was 92.6% and the specificity of 92.2%. Age more than 40 years and experiencing headache between 3 —6 months were found to have association with abnormalities detected with adjusted OR 0.19 1 (0.07, 0.51) and 4.86 (1.37, 17.26) respectively. Intracranial abnormalities detected by FLAIR sequence were white matter lesions, meningioma, teratoma, meningo-encephalitis and intracranial haemorrhages. On the other hand, FLAIR missed to detect a small sub-ependymal nodule and arachnoid cyst in CSF spaces.

Conclusion : Since FLAIR sequence is sensitive in detecting intracranial lesions, it can be used as a screening sequence in patients with headache but no neurological deficit. The MR examination time can be shortened and the number of patients for MR examination per day can be increased.

Dr. Win Mar @ Salmah Jalaludin : Supervisor
Dr. Mohd Ezane Aziz : Co-Supervisor

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EFFECT OF KACIP FATIMAH (LABISIA PUMILA) WATER EXTRACTION ON MAMMOGRAPHIC DENSITY-A PILOT STUDY

Dr. Tan Boon Keat
MMed Radiology

Department of Radiology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Kacip Fatimah is a traditional herb that contains phytoestrogen and is commonly used by the Malay population in Malaysia to treat various gynecological illnesses. It is also used as an alternative to hormone replacement therapy due to its estrogenic effect. Postmenopausal hormone use is associated with increase in mammographic density and mammographic density is an independent risk factor for breast cancer.

Objective : Our purpose was to evaluate the effect of Kacip Fatimah (Labisia pumila) water extract on mammographic density in postmenopausal women.

Patients & Methods : A prospective, randomized, double-blind placebo-controlled pilot study was conducted. A total of 69 postmenopausal women were equally randomized to receive Kacip Fatimah water extract 140 mg/day, 280 mg/day, 560 mg/day or placebo. Mammograms were performed at baseline and after 6 months of treatment. Mammographic density was evaluated according to percentage scale, BIRAD classification and computer assisted measurement of breast density.

Result : The categorical assessments showed that there was no significant shift in categorical classification as assessed by BIRAD and percentage categories in either control or treatment groups. There was slight increase in breast density as assessed by computer assisted method although the increases were not statistically significant. The increases in breast density over pretreatment baseline were 0.2 %, 0.1 %, 1.5 % and 0.6 % for placebo,140 mg group, 280 mg group and 560 mg group, respectively. These values were not significantly different one another. This small increase in breast density might be due to the

fact that phytoestrogen is a week estrogen.

Conclusion : Kacip Fatimah extract given over a period of 6 months did not significantly affect mammographic density.

Dr. Munirah Bin Nik Mahdi : Supervisor
Dr.Nik Hazlina Nik Hussain : Co-Supervisor

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FATTY LIVER IN OBESE CHILDREN: A STUDY OF ULTRASONOGRAPHY AND LIVER ENZYME LEVELS IN HOSPITAL UNIVERSITI SAINS MALAYSIA.

Dr. Wan Najwa Zaini Wan Mohamed
MMed Radiology

Department of Radiology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objectives : To determine the prevalence of fatty liver in obese children in 1-TUSM, as assessed by ultrasonography and liver enzyme levels; To identify any correlation between ultrasonographically detected fatty liver and liver enzyme levels. To identify other factors affecting fatty liver in obese children in HUSM such as age, sex, BMI, age of obesity onset, duration of obesity and fasting lipid profile.

Patients & Methods : This study was carried out in Hospital USM, Kelantan for duration of 18 months from December 2004 until May 2006. A total of 32 obese children were subjected to several anthropometric measurements, blood investigations including liver function test and ultrasonography of the abdomen using 3.5 MHz transducer. The degree of fatty liver involvement was analyzed using several ultrasonographic criteria, namely liver-kidney echo discrepancy, posterior beam attenuation and portal vein wall clarity. Comparison between fatty liver on US and raised liver enzymes as well as correlations with other demographic figures were analyzed using appropriate statistical tests.

Results : Prevalence of fatty liver as assessed by ultrasound and liver enzyme levels were 65.6% and 37.5% respectively. This implies a higher detection rate achievable using ultrasonography and cases can be missed if assessed by liver enzymes alone. There was 65.6% of children with hepatomegaly, and 90.5% of these children had fatty liver. Significant correlations were found between ultrasonographically detected fatty liver and liver enzyme levels (p < 0.005 for ALT; p < 0.01 for AST). Significant relationship was also observed between degrees of fatty liver and raised liver enzymes (p < 0.005). Hepatomegaly showed significant correlations with fatty liver and liver enzyme levels (p < 0.01 for both), however not with degrees of fatty liver (p > 0.05). BMI was the only other factor which showed significant correlation with ultrasonographically detected fatty liver, hepatomegaly and raised ALT levels (p < 0.05). No significant correlation was found between fatty liver disease and other demographic data or fasting lipid profiles using both methods (p > 0.05).

Conclusion : The prevalence of fatty liver disease in obese children as assessed by ultrasonography and liver enzyme levels were 65.6% and 37.5% respectively. Ultrasound is a reliable, non-invasive method which correlated well with hypertransaminases and increasing BMI. It is recommended that ultrasound be included in the screening and monitoring of NAFLD in children.

Dr. Noreen Norfaraheen Lee Abdullah : Supervisor :
Dr. Noorizan Abdul Majid : Co-Supervisor

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IDENTIFICATION OF LOW OR NO DIAGNOSTIC YIELD OF ULTRASOUND REFERRALS IN PATIENTS WITH SUSPECTED GALLSTONE DISEASE IN DEPARTMENT OF RADIOLOGY, HOSPITAL UNIVERSITI SAINS MALAYSIA.

Dr. Fazilah Mustapha
MMed Radiology

Department of Radiology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Gallstone disease and its complications are common medical and surgical problems with a wide spectrum of presentation that can mimic other diseases at presentation. Therefore many patients were referred to department of radiology for a definitive diagnosis.

Patients & Methods : This was a cross sectional study conducted prospectively for 12 months from May 2005 until April 2006. Referred patients with suspected gallstone disease would be interviewed based on a gall stones biliary 'check list' before ultrasound examination and some patient would be interviewed by telephone within I month of ultrasound examination. The identification of a low or no diagnostic yield of ultrasound will be based on symptoms and scoring adapted from a previous study.

Result : There were 79 patients of suspected gallstone disease referred for ultrasound examination. Forty seven (59.5%) were negative for gallstone disease and 32 (40.1%) were positive for gallstone disease. Significant correlation between positive ultrasound findings and ethnic group (p value 0.04), duration of pain in each episode (p value 0.02), Murphy's sign (p value 0.02), and flatulence (p value 0.003) were elicited. There were no significant correlation between positive ultrasound findings with sex, age, parity, BMI, duration of symptoms and source of referrals (p more than 0.05). Of 47 patients (59.4%) which were negative for gallstone disease, 12 patients (25.5%) had low or no diagnostic yield of referrals of gallstone disease. The associated factors for low or no diagnostic yield of referrals was not possible to be analyzed due to very small sample size.

Conclusion : Twelve patients (25.5%) were found to have low or no diagnostic yield of referrals for gallstone disease. If these patients were not referred for ultrasound examination, the workload of radiology department would be much reduced and patients' money would not be wasted on unnecessary investigation. However due to very small sample size, the result of this study might not represent the actual population.

Dr. Nik Munirah Nik Mahdi : Supervisor
Assoc. Prof. Dr. Nurul Azman Alias : Co-Supervisor

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Dr. Siti Jusna @ Siti Sharifah bt Muhammad
MMed Radiology

Department of Radiology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

CT BRAIN STUDY TO DETERMINE THE SITE OF PREDILECTION OF INTRACRANIAL LESIONS IN HIV/AIDS PATIENT WITH NEUROLOGICAL SYMPTOMS AND ITS ASSOCIATION WITH TOXOPLASMA AND CRYPTOCOCCAL INFECTIONS.

Objective : To determine the distribution of intracranial lesions ; To find out the association between site of intracranial lesions with toxoplasma and cryptococcal infections ; To find out the association between CT findings with toxoplasma and cryptococcal infections ; To determine the association between CD4 count with toxoplasma and cryptococcal infections.

Patients & Methods : Ethics committee approval and informed consent were obtained. This cross sectional study was carried out in Hospital USM, Kubang Kerian and Hospital Raja Perempuan Zainab II (HRPZ II) for 12 months from January 2005 until December 2005. Plain and contrast cranial CT scan were performed on a total of 56 HIV patients with neurological signs and symptoms.

Results : There were 7/56 (12.5 %) middle stage and 49/56 (87.5%) late stage patients. Majority of patient presented with non-focal symptoms 52/56 (92.9%) in which headache was the most frequent complaint 17/52 (32.7%). Patient with toxoplasmosis and cryptococcosis constituted 70.7% (29/41) and 233% (10/43) of total subject investigated. CT scans were normal in 13 (23.2%) and abnormal in 43 (76.85) cases. Majority of the lesions were multiple 24/38 (63.2%). In general, lesions were mostly found in supratentorial region within the parietal (73.7%) followed by occipital (55.3%), frontal (47.4%) and temporal (36.8%) lobes. Basal ganglia region was affected in 52.6% of cases. Patients with Toxoplasmosis had lesions at frontal lobe in 31%, parietal lobe in 58.6%, occipital lobe in 34.5%, temporal lobe in 20.7% lobe and 34.5% at basal ganglia area. In patients with cryptococcosis, lesions were found 40% at parietal lobe, 30% at occipital lobe, 10% at temporal lobe and 10% at basal ganglia area. No lesion was found at frontal lobe in those patients with cryptococcosis in this study. No association was detected between CD4 counts or CT findings with etiology of the lesion (*Toxoplasma* and *Cryptococcus)* and between etiologies of lesion with site of intracranial lesions in this study

Conclusion : We conclude that in general, parietal lobe is commonly involved in both opportunistic infections. No association was detected between CD4 counts or CT findings with etiologies of the lesion and between etiologies of lesion with site of intracranial lesions in this study. Toxoplasmosis however was a major opportunistic organism giving rise to various CNS manifestations in our HIV-infected patients with potential significant contribution of tuberculosis and cryptococcosis. Frontal lobe, temporal lobe and basal ganglia however, are more commonly involved in HIV patients with toxoplasmosis than in HIV patients with cryptococcosis.

Assoc. Prof. Dr. Hj. Abd. Kareem : Supervisor
Assoc. Prof. Dr. Nurul Azman Alias : Co-Supervisor
Dr Hj. Arif Abas : Co-Supervisor

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RANDOMIZED CLINICAL TRIAL COMPARING DIFFERENT METHODS OF BOWEL PREPARATION USING ORAL SODIUM PHOSPHATE FOR DAY-CARE COLONOSCOPY

Dr. Teoh Boon Wei
MMed Surgery

Department of Surgery,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Objectives : To compare two different timings for a similar bowel preparation agent (oral sodium phosphate, NaP) and determine the quality of bowel cleansing plus patient tolerance, compliance and acceptability.

Patients & Methods : This is a prospective randomized clinical trial involving 97 out-patients attending the surgical clinic of Penang Hospital who were planned for elective colonoscopy. All eligible patients who agreed to participate were randomized into two groups (one group was required to take NaP at a 4-hour interval (1500h and 1900h on the day before the colonoscopy) and another group at a 12-hour interval (1800h on the day before the colonoscopy and 0600h on the day of the colonoscopy). Instructions for bowel preparation were given accordingly. The subjects were given a questionnaire to complete prior to their procedure. After the procedure, the colonoscopists (who were blinded to the patients' assigned group) were in turn given a questionnaire to fill. Data were then collected and compiled for analysis.

Results : There was equal distribution of male and female patients for both groups with an average age of 52.5 years. The commonest indication for elective colonoscopy was for altered bowel habits, followed by bleeding, abdominal pain or discomfort, screening and

finally anaemia. Of the side-effects questioned, none differed significantly from each other. Most patients tolerated both bowel preparations well with a median total patient score of 6 out of a possible maximum score of 24. However, patients who took NaP over two days (Group 2) had significantly more incidence of postural hypotension than the other group which took NaP over one day (Group 1). Group 2 patients also had more number of bowel movements (10.46 ± 5.32 versus 7.96 ± 3.24 in Group 1) and found it harder to complete their bowel preparation. Even then, Group 2 patients were just as willing as Group 1 patients to take the same bowel preparation again if colonoscopic examination was required in the future. Total score for quality of bowel preparation was 3.17 ± 2.97 in Group 2 as opposed to 4.90 ± 2.98 in Group 1. That means overall, Group 2 patients had better bowel cleansing than Group 1 patients.

Conclusion : With other factors such as gender, age and indication for colonoscopy neutralized by randomization, it was found that the incidence of side-effects following either bowel preparation regimen is the same except for postural hypotension which is more common in Group 2 patients. Group 2 patients also had more bowel movements and that is why they found it harder to complete their bowel preparation. Since Group 2 patients had more bowel movements, they also had the better prepared bowel. If the effects of postural hypotension caused by hypovolemia can be negated by increased fluid consumption, we would find that taking NaP over the course of two days would definitely be superior. However, it is recommended that this method be prescribed selectively for fit patients with no major medical illness and ultimately, clinical discretion need to be employed to decide on the appropriate bowel preparation method for a particular patient.

Dr. Syed Hasan Syed Aziz : Supervisor
Mr. Manjit Singh : Co-Supervisor

● ●

OUTCOME OF ENDOSCOPIX CLEARARANCE OF BILLE DUCT SONES AFTER ENFTER ENDOSCOPIC SPHINCTEROTOMY (ES):HOSPITAL KOTA BHATU (HKB) EXPERINCE.

Dr. Ng Sze How
MMed Surgery

Department of Surgery,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Choledocholithiasis or common bile duct (CBD) stones are still frequently encountered in cholecystectomy patients. The use of endoscopic retrograde cholangiopancreaticography (ERCP) and endoscopic sphincterotomy (ES) in the management of CBD stones has progressed tremendously. However, the controversy is still present in Malaysia as its morbidity and morbidity can be significant.

Objectives : The present study is designed to assess the results of endoscopic clearance of CBD stones after ES in relation to the number, location and size of the stone with help of mechanical or electrohyraulic lithotripsy, Dormia basket and balloon catheter. It is also to evaluate its complications.

Patients & Methods : Retrospective case review of 111 patients with CBD stones who had undergone ERCP from January 2003 to December 2005 in Hospital Kota Bharu (HKB), Kelantan. Data of those patients who fulfilled the criteria were documented and the clearance rate as well as the complications of the procedure were analysed using SPSS software (version 11.0).

Results : ERCP with ES was attempted in 111 patients and stone clearance was successful in 68 (61.3%) patients. 71 (64%) were female and 40 (36%) were male. The median age of male was 54 years old and of female was 49 years old. Female patients predominantly presented with smaller (<10 mm), distally located and multiple stone. There were 51(63.8%), 40 (64.5%) and 50 (66.7%) female patients

with smaller, distally located and multiple CBD stones respectively. CBD stones which were <10 mm and distally located had more successful clearance while the number of stone showed no statistical difference. Complications occurred in 14 (12.6%) patients, bleeding in 4 (3.6%) patients, acute pancreatitis in 8 (7.5%) patients, sepsis or cholangitis as well as perforation each in 1 (0.9%) patient and no death was reported. Lastly, 7 (6.3%) patients needed surgical interventions and 2 of them had undergone emergency lap arotomy for the complication and 5 patients required CBD exploration after failure to retrieve the stone by ERCP.

Conclusion : This study suggested that ERCP with ES continue to play an important and effective role in the management of CBD stones. Stone extraction by ERCP and ES has been found to be effective, safe and easy to perform. More importantly, it also has demonstrated that the smaller (<10mm) and distally located stones were easier to retrieve regardless of the number of stones in the CBD. Moreover, an acceptable complication rate for endoscopic therapy of CBD stone in HKB was found comparable to elsewhere in the world. However, more stringent criteria with larger number of cases, review, and ongoing practice are needed to ensure optimal benefit to patients in the future.

Dr. Mohamad Shukri Nik Yahya : Supervisor
Dato'Dr.Hasim Mohamad : Supervisor
Dr. Syed Hassam Syed Abdul Aziz : Co-Supervisor
Dr. Mohd. Nor Gohar Rahman : Co-Supervisor

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THE EXPRESSION OF INSULIN-LIKE GROWTH FACTORS AND THEIR RECEPTORS AT PREIMPLANTATION STAGE IN REPRODUCTIVE TISSUES OF DIABETIC MOUSE

Dr. Rahimah binti Zakaria
PhD (USM)

Department of Psychology,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : We hypothesized that the alteration in the expression of IGFs and their receptors may create an abnormal intrauterine environment thus affect embryos development.

Objectives : The aims of the present study were to determine the effects of diabetes on in vitro development of mouse preimplantation embryos and to determine the mRNA and protein expression of IGF-1, IGF-2, IGF-1R and IGF-2R in the fallopian tube and uterine tissue of control and diabetic mice.

Methodology : Sexually mature female ICR mice of 6-8 weeks old were made diabetic by streptozotocin (200 mg/kg, intraperitoneal). The normal two-cell embryos were obtained from superovulated control and diabetic mice at 48 post-hCG treatment. Embryos were separately cultured and examined under an inverted microscope for 3 consecutive days. Fallopian tubes and uterine tissues were obtained from the superovulated control and diabetic mice at 48, 72 and 96 hours post-hCG treatment. The mRNA expression was measured using Real time PCR using specifically developed homologous internal standards for each gene. Protein expression was measured by immunohistochemical staining and a semiquantitative scoring was performed using a standardized 5-scale system.

Results : The number of normal two-cell embryos obtained from diabetic mice was much reduced when compared to control mice. However, there was no significant difference in the percentage of two-cell embryo development in control and diabetic mice. The mRNA expression of IGF-1 in the fallopian tube and uterus of diabetic mice was significantly low at 72 hours and 96 hours post-hCG treatment, respectively. The mRNA expression of IGF-1 R remained high in the fallopian tube but was significantly low in the uterus of diabetic mice at 96 hours post-hCG treatment. The mRNA expression IGF-2 in the

fallopian tube was significantly high at 48 and 96 hours post-hCG treatment but was significantly low in the uterus of diabetic mice at 96 hours post-hCG treatment. The mRNA expression of IGF-2R in the fallopian tube and uterus of diabetic mice was L significantly high at 48 and 96 hours, and at 48 hours post-hCG treatments, respectively. For protein expression, the immunohistochemical scoring for both IGF-1 and IGF-IR was significantly decreased in the fallopian tube of diabetic mice at 96 hours post-hCG treatment. In contrast, the score for IGF-2 and IGF 2R was significantly increased in the fallopian tube of diabetic mice at 48 and 72 hours; and at 72 hours post-hCG treatment, respectively. However, there was no significant difference in the score of IGFs and their receptors in the uterus of control and diabetic mice.

Conclusions : In conclusion, the percentage of the two-cell stage embryos which developed to blastocysts was similar in control and diabetic groups but whether the quality of these embryos were the same could not be confirmed. Both the mRNA and protein expression of IGFs and their receptors were significantly altered by maternal diabetes, which suggest their role in the pathogenesis of diabetic embryopathy.

Assoc. Prof. Dr. Nik Soriani Yaacob : Supervisor
Prof. Mohd. Hamim Rajikin : Co-Supervisor

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AN INVESTIGATION OF THE EFFECTS OF JUMPING EXERCISE AND SUBSEQUENT DECONDITIONING ON THE TIBIA AND THE DETERMINATION OF THE MINIMUM LEVEL OF JUMPING EXERCISE REQUIRED TO MAINTAIN EXERCISE-INDUCED TIBIAL GAINS IN FEMALE RATS

Ooi Foon Kiew
PhD (Sport Sciences)

Sport Sciences Unit,
School of Medical Sciences, University Sains Malaysia,
Health Campus, Kelantan, Malaysia.

Introduction : Although high impact jumping is considered effective in improving bone strength, little is known about the minimum level of jumping exercise needed to maintain these jump-induced bone gains.

Objectives : This study was carried out first to determine an appropriate jumping training programme, and then to examine the effects of this jumping training programme and subsequent deconditioning on bone, and to finally determine the minimum level of jumping that will then be required to maintain the jump- induced bone gains in 12-week old Wistar Kyoto female rats.

Material & Methods : The study was carried out in three phases: In phase I, an appropriate standard training programme (STP) was determined. In phase II, the effects of 12 and 24 weeks of deconditioning after the STP were investigated, and in phase III, the minimum level of exercise that was required to maintain STP-induced bone gains over a period of 24 weeks was determined. To determine the appropriate STP, ninety rats were divided into ten experimental groups, where the groups performed either no exercise or performed jumping exercise for 2, 4, 6, 8 or 10 weeks (n=9 per group). The exercise regimen consisted of 40 jumps per day (40J/d) for 5 days per week (5dIw) at a jump height of 40 cm. From this, it was found that a minimum of 6 weeks of jumping exercise was required to significantly (p<O.O5) increase bone gains in mass, mechanical property and physical dimensions. Consequently, an 8-week jumping exercise programme with a regimen of 40J/d and 5d/w (8STP) was selected as the standard training programme for the ensuing phases of the study. In the second phase, ninety rats (n=10 per group) were divided into nine groups, i.e. one baseline control group and eight experimental groups, where the latter groups were given either no exercise for 8, 20 or 32 weeks, or received 8STP, or 8STP followed by 12 or 24 weeks of no STP, or 8STP followed by another 12 or 24 weeks of STP. In the third phase of

the study, one hundred and thirty rats (n=1O per group) were divided into thirteen experimental groups. Two groups of rats were given no exercise for either 8 or 32 weeks. The remaining groups received 8STP, or 8STP followed by 24 weeks of no exercise, or 8STP followed by 24 weeks of further jumping exercise at intensities of either 40J/d, or 20J/d, or 1OJ/d, each for either 5d/w, or 3d/w, or ld/w. At the end of the experimental period, animals were decapitated and the right hind tibiae were harvested for measurement of bone mass (tibial wet weight and fat free dry weight), bone mechanical properties (tibial mid shaft ultimate bending load/bone strength, stiffness and moment of inertia), bone physical dimensions (tibial length, tibial mid shaft maximum and minimum diameters) and bone morphometry (the cross-sectional tibial mid shaft cortical area, medullary area, periosteal perimeter and endosteal perimeter). Calcium, osteocalcin and alkaline phosphatase (bone formation markers) and C-terminal telopeptide of type 1 collagen/ 1CTP (bone resorption marker) were determined in the serum.

Result : Fat free dry weight, ultimate bending load, maximum and minimum diameters, cortical area, periosteal perimeter and endosteal perimeter of the tibiae were significantly (p<0.05) greater in rats given 8STP when compared to those in the sedentary controls. However, no detectable changes in serum parameters were evident after 8STP. The 8STP-induced bone gains like ultimate bending load, maximum diameter and cortical area were still maintained after 12 weeks of complete cessation of jumping. However, with the exception of cortical area, all measured 8STP-induced bone gains were lost after 24 weeks of complete cessation of jumping. When the rats were further trained with different exercise regimens for another 24 weeks after 8STP, it was found that the minimum levels of exercise required to maintain the 8STP-induced bone gains in wet and fat free dry weight, ultimate bending load, moment of inertia, maximum diameter, periosteal perimeter and cortical area were 38 jumps per week (J/w), 31J/w, 36J/w, 27J/w, 12J/w, 25J/w and 21J/w respectively. No significant differences were observed in blood parameters between the exercised and sedentary groups except for serum alkaline phosphatase and 1CTP, which were significantly (p<O.05) different from controls in rats receiving a work load of 40J/w and above.

Conclusions : The data indicated that 8STP significantly (p<0.05) increased bone gains and the decay in exercise-induced bone gains was not uniform. However, most of the exercise-induced bone gains following 8STP could not be preserved after 24 weeks of deconditioning. Nevertheless, it is possible to maintain these bone gains, over a period of at least 24 weeks, with much lower exercise frequency and intensity, ranging from 6 to 19% of the original exercise work load. The minimum level of exercise required to maintain the bone gains however varied slightly from parameter to parameter. An activity comprising of 30J/w given at IOJ/d and for 3d/w appeared the most appropriate. Whether this minimum level of physical activity can maintain these bone gains for a longer period remains to be ascertained.

Prof. Rabindarjeet Singh : Supervisor
Prof. Harbindar Jeet Singh : Co-Supervisor
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