ANTIMICROBIAL DOSE IN OBESE PATIENT

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Introduction: Obesity is a chronic disease that has become one of major public health issue in Malaysia because of its association with other disease states including cardiovascular disease and diabetes. Despite continuous efforts to educate the public about the health risks associated with obesity, prevalence of the disease continues to increase. Dosing of many medications are based on weight, limited data are available on how antimicrobial agents should be dosed in obesity. The aim of this case presentation is to discuss dose of antibiotic in obese patient.

Case report: Patient: GMN, Malay, Female, 45year old, 150kg, transferred from medical ward to ICU with problems of fever, orthopnea, sepsis secondary to nosocomial pneumonia**.** She was admitted to hospital a week ago for SOB on exertion, cyanosis, mildly dyspneic, somasthenia, bilateral ankle swelling. There was no fever, cough, chest pain, clubbing, flapping tremor. Her grand father has pre-morbid history of obesity, HPT, DM and asthma. She was non alcoholic, smoker, and not on diet control.The diagnosis Pickwickian syndrome was made. Patient was treated with IV Dopamine 11mcg/kg/min, IV Morphine 4mg/h. IV GTN 15mcg/min , IV Ca gluconate 10g/24h for 3/7 , IV Zantac 50mg tds , IV Augmentin 1.2g tds , IV Lasix 40mg od, IV Plasil 10mg tds, S.c heparin 5000IU bd. patient become stable and moved to medical ward to continue her treatment.

Discussion: The altered physiologic function seen in obese patients is a concern in patients receiving antimicrobial agents because therapeutic outcomes depend on achieving a minimum inhibitory concentration (MIC). The therapeutic effect of any drug can be altered when any of the 4 pharmacokinetic processes (absorption, distribution, metabolism, or elimination) are altered. Decreased blood flow rates and increased renal clearance in obese patients can affect drug distribution and elimination. Changes in serum protein levels can change the metabolism and distribution of drugs that are highly protein bound; the effects of these physiologic differences should be considered when administrating antimicrobial agents in obese patients.

Conclusion: Generally this patient was moderately well managed in view of inappropriate combination of antibiotic, duplication or unnecessary use of antibiotic for treatment of sepsis, more clinical studies are needed to determine antibiotic dose in obese patient.

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THE EFFECTS OF PARASPORAL INCLUSIONS FROM MALAYSIAN STRAINS OF BACILLUS THURINGIENSIS *ON LEUKAEMIC CELL LINES*

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Introduction: *Bacillus thuringiensis* (Bt), a Gram-positive, spore-forming bacterium has the ability to produce proteinaceous parasporal inclusion bodies. The parasporal inclusions often contain δ-endotoxin proteins and are long associated to have highly specific and toxic insecticidal activity. Recent studies have reported that there are Bt strains with selective anticancer activity. In Malaysia, preliminary studies suggest that the solubilised and activated parasporal inclusions of a Bt strain (designated Bt 18) is specifically cytotoxic against CEM-SS cell lines but non-cytotoxic to HeLa, MCF-7 and colorectal cell line. The objective of this study is to determine the effect of Bt 18 parasporal inclusion against various human leukaemic cell lines and its mode of action.

Methods: Dose-dependent and time-dependent screening for Bt 18 parasporal inclusions against normal human lymphocytes and leukaemic cell lines (CCRF-SB, CCRF-HSB-2, CEM-SS) viability was carried out using resazurin (Alamar Blue) fluorescence dye. The apoptotic or necrotic effect of Bt 18 parasporal inclusions against human leukaemic cell lines was determined by the active caspase-3 assay and confirmed by TUNEL assay.

Results: Our study indicates that solubilised, activated and purified Bt 18 parasporal inclusion significantly ($p \leq 0.05$) decreased the percentage cell viability of all leukaemic cell lines at 32.0 μg/mL. However, normal lymphocytes did not show any significant ($p \geq 0.05$) inhibition in percentage cell viability at all concentrations tested and throughout the various treatment time periods. The results suggest that Bt 18 parasporal inclusion has a specific antineoplastic effect. This could be due to the differences in cell membrane component between normal cells and leukaemic cells, which allow Bt 18 parasporal inclusion to bind to the cancer cell membrane receptors and consequently penetrate the cell membrane and induce cell death. Furthermore, for all leukaemic cell lines treated with Bt 18 parasporal inclusion the percentage of cell viability showed a declining time-dependent and linear relationship from 24 to 72 hours at 32.0 μg/mL. The active caspase-3 activity assay indicates the mode of cell death was through apoptosis. This observation was further confirmed by TUNEL method.

Conclusion: The solubilised, activated and purified Bt 18 parasporal inclusions significantly ($p \leq 0.05$) reduced the percentage cell viability of human leukaemic cell lines (CCRF-SB, CCRF-HSB-2, CEM-SS) at 32.0 μg/mL. At this concentration, the parasporal inclusion did not significantly ($p \geq 0.05$) reduce the percentage cell viability of the human normal lymphocytes. The decrease in percentage cell viability was probably due to apoptosis.

BASELINE SURVEY ON KNOWLEDGE ATTITUDE AND PRACTICES ON CONTROL OF NOSOCOMIAL INFECTION AMONG HEALTHCARE WORKERS IN ADULT INTENSIVE CARE UNITS

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Introduction: This study reports the baseline information on the knowledge, attitudes, and practices (KAP) among Malaysian healthcare workers in two adult intensive care units in relation to the control of nosocomial infection. In addition, the study aimed to identify the differences in scores of healthcare workers KAP between the control and experimental group after an infection control education program on nosocomial infection (NI) was instituted.

Methodology: Institutional ethic committee approval and informed consent were obtained. An experimental design study was done from January till June 2006. Pre KAP data was collected using validated questionnaire among 60 healthcare workers in Hospital Ipoh (experimental group) and 40 healthcare workers in Hospital Universiti Sains Malaysia (control group) before implementation of an intervention program to the experimental group. Post KAP data was collected in both groups.

Results: There was a significant change in KAP scores in the experimental group whereas no change in knowledge and attitude in the control group. The mean difference in knowledge is 1.6 (SD - 6.18; CI - 0.55; 4.61; p value - 0.014); attitude is 2.1 (SD - 4.77; CI - 0.56; 3.70; p value - 0.009) and practice is 4.03 (SD - 6.91; CI - 1.76; 6.30; p value - 0.001) in experimental group. Inferential data analysis showed that the intervention program had a significant positive influence on their KAP compared to the control group.

Conclusion: There is an increase in knowledge and positive attitude on control of NI after the intervention program. Frequent CME promote positive attitude and increase motivation in prevention of NI in ICU. Good clinical practice should be practiced in order to minimize the incidence of NI.

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AN EXPERIMENTAL RNOMICS APPROACH TOWARDS THE IDENTIFICATION AND CHARACTERIZATION OF NONPROTEIN-CODING RNA IN PATHOGENIC AGENT, SALMONELLA TYPHI

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Introduction: Non-protein-coding RNAs (npcRNAs) are an emerging class of regulator that wide-spread in the bacterial genomes. Typically, these molecules are 20-500nt in length. They involved in cellular functions such as cell growth and differentiation. The computational search for the npcRNAs has encounter the limitation as the npcRNAs do not has the distinct features that the protein coding genes have. Therefore, the experimental approach termed Experimental RNomics has the advantages compared to the computational approaches. However, none of this study had look into npcRNAs in pathogen. By an experimental RNomics approach, we aim to identify and characterize npcRNAs in *Salmonella typhi* and to elucidate their role in disease and with potential for future development as antimicrobial target or RNA-based diagnostics target.

Methodology: Total RNA from lag, exponential and stationary phases of *S. typhi* was extracted, size selected between 10-500nt and constructed into cDNA library representing npcRNA species. The cDNAs were sequenced and aligned using MacDNAsis. BLASTN database search was performed to identify and characterize the npcRNAs. Their level of expression was confirmed by northern blot analysis.

Results: 2000 clones were sequence and assembled into 388 contigs. Following BlastN searches, 23% can be assigned as tRNAs or its precursor, 24% were fragmentation of ORF, 13% overlapping ORF, 20% rRNA and 1% are poor sequences. A total of 19% (90 candidates) were identified as potential candidate npcRNAs in *S. typhi*. Out of this, 2% belongs to the known npcRNAs family, whereas 5% and 12% were derived from intergenic region or reverse complement to an ORF. Interestingly, some of these npcRNA species resembled *E.coli's* npcRNA that are defined by their strong interaction with the RNA chaperone Hfq. Their expression patterns were characterized by Northern blot analysis.

Conclusions: Experimental RNomic identified 90 potential candidates npcRNAs from *S. typhi*. Further characterization will be carried out to elucidate its potential function cell growth and pathogenesis

STUDY ON THE DIETARY PATTERN, BLOOD PRESSURE AND STRESS LEVELS OF ADOLESCENT GIRLS

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Introduction: Hypertension rarely shows symptoms and can reach very high levels resulting in end-organ complications without any warning, so early detection is of vital importance. The main objective was to study the dietary pattern, blood pressure and stress levels of adolescent girls and teach them ways of managing hypertension.

Methodology: The study was conducted in two phases among 1000 college girls selected from four women's colleges in the city of Chennai. In Phase I a survey design was adopted to study the dietary pattern of the college girls and also assess their anthropometric status, waist- hip ratio, blood pressure levels and stress levels. In Phase II a workshop on diet, yoga and meditation was organized for the college girls with high blood pressure and high stress levels.

Results: 1.3 percent of the sample had high blood pressure, 43 percent had normal blood pressure and 55.7 percent had low blood pressure. Majority of the college girls had low stress levels and only 1.9 percent of them had high stress levels. There was a significant difference in the mean nutrient intake for energy, carbohydrate, protein and fat between the risk (girls with high blood pressure and high stress levels) and non-risk group (girls with normal blood pressure and low stress levels). The chi-square values computed showed that there was a significant association between the meal pattern and the blood pressure levels of college girls. A workshop on diet, yoga and meditation was conducted for the girls with high blood pressure and high stress levels to help them effectively manage hypertension and also stress, the major causative factor for hypertension among adolescents.

Conclusion: High blood pressure is likely to become a major problem among adolescents in the near future. Proper diet and life style modification can help prevent hypertension and non drug intervention like yoga and meditation can be used to control hypertension among adolescents.

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A SIMPLE AND SENSITIVE METHOD FOR THE DETECTION OF DICHLORODIPHENYLTRICHLOROETHANE (DDT) METABOLITES IN MECONIUM USING GAS CHROMATOGRAPHY- MASS SPECTROMETRY (GC-MS)

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Introduction: Chronic foetal exposure to dichlorodiphenyltrichloroethane (DDT) is a major concern as it has been linked to developmental defects. The aim of this study is to develop a method for the determination of DDT in meconium.

Method: A gas chromatography-mass spectrometry (GC-MS) was optimized for oven temperature, oven temperature ramp, inlet temperature, purging time and purging flow for better areas and retention times of the two metabolites; *o.p*'-DDE and *p.p*'-DDE. Meconium samples were collected from Penang General Hospital, mixed and extracted using different solvents, acids, and concentrations of acids. The method was then validated. The applicability of the assay was demonstrated in 20 meconium samples.

Results: The limit of detection and limit of quantitation for both metabolites were 5 ng/g and 10 ng/g respectively. The recovery of *o.p*'-DDE and *p.p*'-DDE were in the range of 89-96 % and 92-97 % respectively. Within and between assay accuracy was less than 15% for the metabolites while within and between assay precision was less than 10% for these metabolites.

Conclusion: A sensitive, simple and specific method for the detection and determination of DDT metabolites (*o.p*'-DDE and *p,p*'-DDE) in meconium was successfully developed and validated using GC-MS.

INTAKE OF DIETARY CAROTENOIDS IN PATIENTS WITH COLORECTAL ADENOMAS

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Introduction: Colorectal adenomas (CRA) are benign neoplasms in the colon that are thought to be precursors of colorectal cancer. It has been estimated that as many as 70-90% of colorectal cancers develop from adenomas. Thus, adenomas are an important area of research for the primary prevention of colorectal cancer. More recently, micronutrients, particularly carotenoids, have attracted attention. We determined whether intakes of the main dietary carotenoids (alpha-carotene, beta-carotene, lutein and lycopene) were different between subjects with colorectal adenomas as compared to healthy subjects.

Methods: A total of 59 patients identified as having adenomatous polyps from colonoscopy (cases) and an equal number of polyp-free subjects (controls) were recruited at Hospital Kuala Lumpur (HKL). A pre-tested questionnaire was used to collect the information of socio-demography and dietary intake. The data were analysed using SPSS version 12.0 and the Nutritionist Pro Diet Analysis Software.

Results: Dietary intake data of four different carotenoids were analysed and three out the four carotenoids were found to be significantly different between study groups. Beta-carotene was found to be consumed by nearly twice the amount by the controls, as compared to case subjects (1588.80 $\pm$ 1248.98 µg in cases vs 852.78 $\pm$ 602.76 µg in controls). The difference was significant at $p<0.05$ ($t=4.077$, $p=0.000$). Intake of alpha-carotene from the diet was also found to be significantly different between both groups ($t=3.608$, $p=0.001$) with a higher mean in the control group. Similarly, the intake of lycopene was significantly higher in the control group, which was found to be consumed four times more than the amount that was consumed by the case group ($t=3.338$, $p=0.001$). However, lutein intake was equal in both groups.

Conclusions: Our results support the notion that certain nutritional factors are important in the development of pre-cancerous lesions. Taken together, the present findings from this study may indicate an early role for carotenoids in CRA development.

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INFLUENCE OF STRESS ON SPERM ANALYSIS AND MALE SEX STEROIDOGENIC HORMONE – A CONFOCAL STUDY

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Introduction: Testosterone response to noise stress was impaired by water restriction and heat exposure. The sperm production and motility were affected by immobilization and noise stress. Noise stress is a geniotoxic agent and it inhibits the production of serotonin, which affects the sperm count and causes piddling ejaculation. Caudal epididymis of mice exposed to 42.0°C had no sperm. The objecyive is to study the influence of stress on sperm analysis and male sex steroidogenic hormone.

Methods: Male Sprague-Dawley rats weighing 200-250gm each were exposed to 120 dB of recorded generator noise for one, two and three hours in acute group and 45, 60 and 90 days in chronic groups. Their normal habitat was maintained. Approximately 5 ml of blood was collected for hormonal study. The animals were anaesthetised with an intraperitoneal injection of intraval sodium (60 mg/ kg body weight) and exsanguinated. Testis and epididymis were collected and fixed in 3.7% *para*-formaldehyde in phosphate-buffered saline (PBSA) and stained with nuclear dye. The sections were prepared for confocal microscopic study and counterstained with cyanine nuclear dye and mounted.

Results: There was a significant reduction in testosterone level in acute and chronic noise exposed groups. The sperm concentrations and the percentage of live spermatozoa were decreased in experimental groups. There was a significant loss of sperm motility and sperms were agglutinated and bundled up in chronic groups.

Conclusions: This study suggests that decreased sperm motility and increased dead spermatozoa had definite role in infertility. Sperm motion analysis could be particularly useful for detecting the toxic effects of stress that act through the endocrine system on the epididymis. The effects produced by noise stress resemble that of the effects produced by toxic substances and other stress factors. Thus, generator noise stress of 120 dB when continuously exposed has a definite role in infertility.

MODULATION OF PEROXISOME PROLIFERATORS-ACTIVATED RECEPTOR GAMMA (PPARG) EXPRESSION IN HELA CELLS BY PROSTAGLANDIN J_2

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Introduction: Cancer of the cervix is rated as the second most common cancer in Malaysian women. A ligand-dependent nuclear receptor, peroxisome proliferators-activated receptor gamma (PPARg) has been reported to be down regulated in human cervical cancer. This study was carried out to evaluate the possible involvement of PPARg in modulating the growth of human cervical cancer cell line, HeLa. An endogenous PPARg ligand, 15-deoxy-prostaglandin J_2 (15d-PGJ_2) was used to treat the HeLa cells.

Methodology: HeLa cells at 10^5 cells/ml were treated with increasing doses of 15d-PGJ_2 (5-30mM) for 6, 12, 24, 36, 48 and 72h. Cytotoxicity was determined by measuring the lactate dehydrogenase (LDH) leakage from the cell membrane. In addition, a flourescein-conjugated monoclonal antibody against cytokeratin 18 (CK18) that recognizes the caspase-cleaved epitope within the CK18 was used to measure apoptosis. The cells were treated with either EC_{50} dose of 15d-PGJ_2 or DMSO (control) for 0, 6, 12, 24, 36 and 72h. Adherent and floating cells were combined and fixed in methanol and incubated with M30 cytoDeath antibody for CK18 detection using flow cytometry. The mRNA levels of PPARg expression in the cell line was measured by Real-time PCR assay. Absolute quantification was done by constructing homologous internal standards of PPARg1 and PPARg2 by cloning the respective fragments into pCR 2.1-TOPO vector. Each plasmid was then used to establish a standard curve for quantification of each corresponding gene.

Results: The effective concentration dose (EC_{50}) of 15d-PGJ_2 was calculated to be 15mM. A significant difference ($p<0.05$) in the levels of apoptosis in treated and control cells was observed with M30 cytoDeath assay. The mRNA expression of both PPARg1 and PPARg2 in the treated cells gradually decreased in a time-dependent manner compared to their expression in control cells.

Conclusion: 15d-PGJ_2 significantly inhibited growth and induced cell death in the human cervical cancer cell line, HeLa. The current study suggests that induction of cervical cancer cell death by 15d-PGJ_2 may occur via apoptosis, involving the activation of specific caspase(s) and also downregulation of PPARγ mRNA expression.

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DETERMINATION OF THE SENSITIVITY AND SPECIFICITY OF ELISA FOR THE DIAGNOSIS OF HCV INFECTION IN PATIENTS WITH RAISED SERUM ALT BY COMPARISON WITH RT-PCR. A PILOT STUDY

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Introduction: Hepatitis C virus (HCV) infection has a universal distribution since it was first discovered in 1989. An estimated of 3% of the world's population has been infected with HCV, indicating that more than 170 million carriers are afflicted by chronic HCV. High prevalence rates also have been found in Southeast Asian countries. Subjects affected by chronic HCV infection quite often have no clinical signs of liver disease but have active viral replication and various degrees of histological damage. Over time, advanced liver histology can lead to cirrhosis and liver cancer. In order to prevent transmission of viruses from infected blood donor to recipient through transfusion of blood and blood products, it is vital to verify sensitivity and specificity of hepatitis C viral loads measurement in diagnostic tests. In general, diagnosis of HCV infection relies on detection of either HCV antibodies or HCV RNA in serum.

Methodology : Enzyme-linked immunosorbent assay (ELISA) and reverse transcription polymerase chain reaction (RT-PCR) have been employed in this study as indirect serological assay and direct detection of HCV RNA in serum.

Objectif: The aim of this preliminary study was to determine the concordance of ELISA with RT-PCR in diagnosing HCV infection in patients with raised serum ALT (>40 IU/L).

Results: Four out of fifteen patients (26.7%) analyzed in this study demonstrated reactivity for HCV antibodies. In RT-PCR, HCV RNA was detected in a patient, corresponding to positive ELISA results obtained.

Conclusion: Thus, there was no difference identified between ELISA and RT-PCR tests for HCV infection for the fifth patient. However, there was no conclusive comparison for other patients as the results obtained in RT-PCR could not be validated.

DEFICIENT INTAKE OF ENERGY AND MACRONUTRIENTS IN FEMALE UNIVERSITY STUDENTS ASSESSED BY COMPOSITE SAMPLES METHOD

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Methodology : Twenty female students were registered from the female hostel of the NWFP, Agricultural University, Peshawar-Pakistan for the assessment of energy and macronutrients (protein, carbohydrate & fats) intakes by duplicate food samples. The age, weight and height of the students were recorded on the day of the registration. The students were asked to collect duplicate food samples for seven days i.e. breakfast, lunch & dinner and whatever else ate during the day. The daily food samples were bulked and composite samples were prepared for a week time. From the body weight & heights of the students the BMI was determined according to the formula; weight in kgs/ (height in meters)^2 as described by the (Bray, 1978). The skin-folds were assessed by using the adipometer and the percent body fats of the students were assessed from the body fat measurement chart for women provided in the manual of the adipometer (ACCU-MEASURE FINESS 2000).The collected duplicate food samples were blended with the help of common kitchen food blender on the next day of the last collection. The samples were analyzed for the macronutrients namely protein, carbohydrates and fats by the A.O.A.C method and consequently the energy was calculated. The energy values of the composites samples were determined by multiplying the daily eaten protein, carbohydrates and fats with 4, 4 and 9 respectively. The anthropometric and dietary intakes were compared with the international norms namely American Dietetic Association (ADA), World Health Organization (WHO) and Health Welfare Canada Nutrition Recommendation. The means were compared for the various parameters with the aforementioned norms as appropriate. The mean and standard deviation for the different aforementioned variables were determined by using a statistical package MINITAB (release 8.2) Inc. State. Drive. USA.

Results : The mean age of the student was 20.80 ± 1.51 years. The height, body weight, skin fold, body fat and basal metabolic index was lower by -4.91, -2.59, -19.17, -16.20 and -4.38 percent respectively from the reference values. Similarly, when the energy and protein intakes were compared with ADA reference values the overall energy intake was lower by -29.34 percent whereas protein intake was higher by 42.65. Compared to the WHO reference values the results followed same pattern and the percent decrease and increase for the energy and protein was -30.57 and 43.29 respectively. When the energy contribution was compared with reference value for the macronutrients namely carbohydrates, protein and fats as suggested by the Health and Welfare Canada Nutrition Recommendations it was higher from protein and carbohydrates by 7.67 and 22.82 percent respectively whereas it is was lower from fat sources by -45.67 percent.

Conclusion : This study suggests that the age group studied is at the risk of energy malnutrition by taking the imbalanced macronutrients dietary sources.

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DUAL FORMS OF MALNUTRITION IN OA HOUSEHOLDS – AN EVIDENCE OF INDIGENOUS PEOPLES UNDERGOING NUTRITION TRANSITION

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Introduction : In many poor households in the developing countries undergoing nutrition transition, stunting or underweight among children can coexist with overweight or obese adults within households. Increasing evidences have shown that indigenous peoples are not spared in that while children are still experiencing chronic malnutrition, diet-related chronic diseases are prevalent among the adults.

Objective: The purpose of this paper is to identify the prevalence of households with underweight or stunted children and overweight or obese women (dual burden household) in Mahmeri and Temuan communities. The paper will also identify factors that differentiate normal and dual burden households.

Methodology: A total number of 182 Mahmeri and Temuan households in Sepang district and Pulau Carey with the required criteria (182 non-pregnant women in child bearing age and 284 children aged 2-9 years old) participated in the study. A pre-tested interviewer-administered questionnaire was utilized to obtain demographic and economic information from the women. The women and children were also measured for weight, height and dietary intakes. Dual burden household is defined as a household consisting of an overweight or obese woman and underweight or stunted child.

Results: The prevalence of overweight (BMI $\geq$ 25) and obesity (BMI $\geq$ 30) among the OA women is 31.3% and 19.8%, respectively. There were 46.8% underweight (<-2 SD) and 52 % stunted (<-2 SD) children. The prevalence of dual burden household in these OA communities is 35.7%. Further analyses will be carried out to determine the differences in demographic, socioeconomic and dietary factors between the normal and dual burden households.

Conclusion: While under-nutrition (underweight and stunting) remains a major health problem among OA children, overweight and obesity are becoming a public health concern among OA adults in these communities undergoing economic and development changes. Health and nutrition strategies that are culturally sensitive to the needs of OA communities are essential to address this rising concern of dual burden of malnutrition.

KNOWLEDGE, ATTITUDE AND PRACTICE OF FUNCTIONAL FOODS AMONG HEALTH PROFESSIONALS

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Introduction: The tenet "Let food be thy medicine and medicine be thy food" espoused by Hippocrates nearly 2500 years ago is receiving renewed interest. Functional foods, include whole foods and fortified, enriched, or enhanced foods that have a potentially beneficial effect on health ,when consumed as part of a varied diet on a regular basis, at effective levels. Knowledge of the role of physiologically active food components, both from phytochemicals (plant sources), and zoo chemicals (animal sources), has changed the role of diet in health. The study assessed the knowledge, attitude and practice of functional foods among health professionals.

Methodology: A random sample of a hundred health professionals (Doctors and dietitians) in the city Chennai were selected for the study. A questionnaire was used for studying the knowledge, attitude and practice of functional foods.

Results: It was observed that the knowledge of health professionals was poor. On a comparative basis it was observed that the knowledge of dietitians was better than that of doctors. However health professionals had positive attitude towards the usage and promotion of functional foods. However the health professionals were of the opinion that functional foods played a major role in preventing a disease rather than treating a disease. A significant positive correlation was observed between attitude and practice of functional foods among health professionals. It was also found that the practice of consuming functional foods as a part of their diet was without the knowledge of their beneficial effects.

Conclusion: In conclusion the knowledge and practice of functional foods among health professionals was poor, but they had a right attitude towards the promotion of functional foods. Doctors and dietitians are in a position to provide effective nutrition interaction. Practicing physicians are advised to stay abreast emerging findings in functional foods, in order to best advise their patients on the value of health-promoting diets in disease prevention.

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SCREENING MALNUTRITION THE QUICK AND EASY WAY IN ORDER TO REDUCE HOSPITALIZATION COSTS

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Introduction : Malnutrition is highly prevalent among hospitalized patients before and during treatment. The length of hospital stay will be significantly decreased if patients are nutritionally intervened at an early stage for malnutrition.
Objective : The aim of this study is to determine the prevalence of malnutrition among patients admitted to the medical wards in Hospital Universiti Kebangsaan Malaysia (HUKM).
Methodology : A total of 81 patients fulfilled the inclusion criteria and selected for the study. There were 31 males and 50 female patients aged between 18 to 83 years. A Subjective Global Assessment (SGA) technique was employed to assess the nutritional status of the patients. The components of the SGA questionnaire comprised of medical history of patients, weight loss, appetite changes, gastrointestinal symptoms and loss of functional capacity. Based on these questions the subjects are further categorized into SGA-A, SGA-B and SGA-C: A being well nourished, B means moderately malnourished and C being severely malnourished respectively. Other physical and biochemical data such as weight, height, MUAC, BMI, serum albumin, hemoglobin were measured and correlated with the SGA data.
Results : The results show that there is a significantly lower BW, BMI. MUAC values for patients with SGA-C and SGA-B scores $p<0.05$. Malnourished subjects had significantly longer hospital stay (9.30 ± 7.40 day versus 7.35 ± 8.20 days) $p<0.05$. The hospital costs for the malnourished patients were significantly higher (RM 418.50 ± 333.00 versus RM 330.75 ± 369.00) $p>0.05$.
Conclusion : In conclusion it is therefore highly recommended that all patients at the hospital setting be assessed nutritionally using the easy SGA techniques at the admission level and nutrition intervention be done immediately. This will ensure good prognosis and quick recovery thus shortening the hospital stay and thus cutting down the economic burden of the patient.

THE EFFECT OF TWO VARIETIES OF HONEY ON GLYCEMIC RESPONSE IN HEALTHY INDIVIDUALS

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Introduction: The glycemic index (GI) is the classification of foods rich in carbohydrates based on the food's effect on blood sugar compared with a standard reference food's effect. The objective of this study was to determine the GI of Malaysian wild honey and Australian honey.

Methodology: This was an experimental study performed at the Dietetics laboratory, Program in Dietetics, School of Health Sciences, and Universiti Sains Malaysia. A total of 10 healthy volunteers, five men and five women, aged 24 - 44 y, with normal body mass indices, were recruited. Subjects were served portions of two varieties of honey and a standard food (glucose), on separate occasions, each containing 50 g carbohydrate. Capillary blood glucose was measured from finger-prick samples in fasted subjects (0 min) and at 15, 30, 45, 60, 90 and 120 min after the consumption of each test food and the standard food. The GI value of the two types of honey was calculated geometrically by expressing the incremental area under the blood glucose curve (AUC) as a percentage of each subject's average AUC for the standard food.

Results: The results showed that the mean AUC of Malaysian wild honey was 174 +/- 19 , Australian honey was 158 ± 16 , and glucose was 259 ± 15 . The mean GI of Malaysian wild honey was 65 ± 7 and Australian honey was 59± 5. Statistical analysis showed significant difference ($P<0.05$) in AUC between glucose and the two varieties of honey. The GI of Malaysian wild honey was not significantly different from that of Australian honey.

Conclusion: We conclude that both Malaysian wild honey and Australian honey are intermediate GI foods.

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PREVALENCE OF NOSOCOMIAL INFECTIONS IN HUSM

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Introduction: Nosocomial infections are hospital acquired infections, those that originate or occur in a hospital or hospital like setting. They can increase the morbidity and mortality, medical interventions, length of hospital stay and hospital cost of the patients.

Methodology: A continuous surveillance of nosocomial infection was carried out in six high risk wards in Hospital Universiti Sains Malaysia (HUSM), namely Intensive Care Unit or ICU (1 Mutiara), Neonatal Intensive Care Unit or NICU (1 Nilam), Neurosurgical ICU (2 Delima), Surgical Ward (2 Intan), Paediatric Oncology (6 Utara) and Medical High Dependency Ward (8 Selatan). The aim was to determine the prevalence and type of nosocomial infections, and the organisms causing the infections in high risk wards in HUSM. The data was collected from January to December 2006 using a standard Nosocomial Infection Surveillance Form filled up by appointed staff nurses in each ward. The data was entered and analysed using SPSS version 12.0.

Results: The overall prevalence of nosocomial infections in the six wards was 5.8%. The Intensive Care Unit (1 Mutiara) showed the highest prevalence of 26.0%, followed by Neonatal Intensive Care Unit (1 Nilam) with 12.1%, 2 Delima (5.6%), 6 Utara (3.9%), 8 Selatan (2.6%) and 2 Intan (1.0%). The commonest type of infection was bacteraemia (65.6%) and the commonest causative organism was acinetobacter species (14.1%). Forty five point six percent of the cases were reported to have prolonged hospitalization.

Conclusions: The prevalence of nosocomial infections in HUSM was comparable to other hospitals. Patients with chronic care and multiple medical and surgical interventions are prone to get nosocomial infections.

A FREQUENTLY FORGOTTEN ILLNESS-GIARDIASIS: CASE REPORT

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Introduction: Giardiasis is caused by a flagellate protozoan parasite, *Giardia lamblia.* Its infection ranges from asymptomatic passage of cyst, acute diarrhea, to a syndrome of chronic diarrhea and malabsorption. The onset of illness is generally abrupt with diarrhea, abdominal cramping, bloating and flatulence are the most common symptoms. Four cases were established in year 2006. Cases were reported based on the detection of *G.lamblia* cyst and /or trophozoite in stool specimens from patients admitted with history of gastrointestinal disturbance.

Case report: The four cases were tabled and summarized. All patients were not clinically suspected of having giardiasis. Two patients had no diarrhea, but stool were sent for the investigation of anaemia and constipation. The other two patients presented with diarrhea without steatorrhoea. *G.lamblia* cysts were the most detected stage in stool specimens. All patients were successfully treated with metronidazole.

Conclusion: The diagnosis of giardiasis cannot be excluded clinically. Hence an appropriate laboratory test is crucial to demonstrate the protozoa. Once detected, the infection is easily treated.

Keywords: giardiasis, case report, cyst, trophozoite

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THE EFFECT OF KNOWLEDGE AND ATTITUDE ON THE PRACTICE OF MULTIMEDIA USAGE AMONG HEALTH SCIENCES LECTURERS FROM 10 MALAYSIAN PUBLIC UNIVERSITIES

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Introduction: Even though multimedia has been used widely for the teaching purpose in the 21st century, it is not fully used by the lecturers in developed and developing countries due to certain influencing factors. The main objective of the study was to investigate the effect of knowledge, attitude, practice (KAP) of multimedia and attitude towards organization support on multimedia usage among Malaysian Health Sciences lecturers in their lecture preparations.

Methodology: A 7 month cross-sectional study was conducted from January to August 2006 among the Health Sciences lecturers from 10 Malaysian Public Universities. One hundred and ninety out of 584 trainee lecturers, lecturers, associate professors and professors from those universities were chosen randomly by using stratified sampling method. An English version of self administrative questionnaire was used as a research instrument for this study. Three means of questionnaire distribution were applied in this study; sending a link of online questionnaire system via email, posting the hard copies from post office and also delivering directly to the lecturers by visiting the universities personally. One hundred-eighty-one out of 190 responded and 171 completed the questionnaire, giving a response rate of 90 %.

Results: After adjusting for confounding variables, the overall practice score for multimedia usage among the participants was significantly associated with their knowledge ($p<0.01$), and attitude towards multimedia ($p<0.05$). The perceived need for the institutional improvement on material support required for multimedia usage has been reported by the participants and was ranked significantly higher than others such as teaching strategies and facilities ($p<0.05$).

Conclusion: The study showed that the organizational support is very much needed in order to increase the KAP scores among Malaysian Health Sciences lecturers and in return it will increase the multimedia usage for their lecture preparations to keep up with the advanced technology and to elevate the Malaysian Health Sciences education with higher technology.

ASSESSMENT OF MEDICAL GRADUATES' COMPETENCES

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Introduction: Competence is defined as outcomes against an agreed standard. High quality medical education is central to high quality outcomes. Medical school provides the educational experiences necessary to provide for the acquisition of minimum essential competences in graduates regardless of where they received their education. This study examined the levels of confidence in performing some procedures acquired by the doctors aimed at continuous development of education.

Methodology: A cross sectional study was carried out among the Universiti Kebangsaan Malaysia medical graduates of academic session 2003-2004 who were doing house jobs at different hospitals in Malaysia after graduation. Data was collected through registered mailed questionnaire containing different attributes of competences. Among 172 graduates, 32 responded and returned the questionnaires, which were analyzed.

Results: 72% - 84% respondents completed major postings like medicine, surgery, obstetric and gynaecology. 100% of the respondents reported, they were always confident in performing catheterization of urinary bladder. Graduates reported they were always confident in taking arterial blood, scrubbing for surgery, amniotomy and insertion of nasogastric tube range between 97 - 72%. 71.87% of the respondents claimed that they were always confident in cardiopulmonary resuscitation. However, the levels of confidence among the respondents were markedly low in performing endotracheal intubation, manual removal of placenta, lumber puncture and exchange transfusion.

Conclusion: Study findings argue whether endotracheal intubation, manual removal of placenta, exchange transfusion are core procedures for housemen or for senior medical officers. What should be the capability for a life saving procedure cardiopulmonary resuscitation? Poor response rate is a study limitation here. Further studies may reveal more information. Developing education and training, medical schools need to identify core competences and standards. Competence-based education should focus to make clear links between education and practice such that education is tailored to the requirements of practice.

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NEGOTIATING MEDICINE: MALAY RESPONSES TO WESTERN MEDICINE IN COLONIAL MALAYA

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Introduction : This research on "Negotiating Medicine: Malay responses to Western Medicine in Colonial Malaya" will be an attempt to study the Malay responses to the introduction of Western medicine by the British administration in Malaya during the years under study.
Methodology : Malay notions of health and sickness will be examined to determine the reasons why Malays were reluctant to accept Western medicine in some cases, and enthusiastic to receive certain kinds of treatments, such as vaccination for yaws, in other cases. It will also be an attempt to look at British efforts to introduce Western medicine to Malay people and the Malay responses to it. For the theoretical framework, I will employ Social Construction Theory, with a focus on diagnosis and illness, as used in medical sociology. This will help to examine how social forces shaped Malays' understanding, responses and actions towards health, illness and healing. Using this theory, I will explore the different ways in which Malays and Britons perceived, diagnosed and treated illness, and how this affected their perceptions, responses and attitudes. The effects of various factors, such as environment, norms, culture, religion etc, in shaping the knowledge base will be studied to determine Malays' understanding and treatment of diseases. This in turn will determine how they negotiated with other medicines, in this case mainly Western medicine.
Results & Conclusion : I expect the results of this research to be multiple and varied, depending upon the spatial, political, economic and situational factors. It is my hope that my findings will help to perfect medical planning and care in contemporary Malaysia.

GLYCEMIC INDEX OF DURIAN, PINEAPPLE, PAPAYA AND WATERMELON THAT ARE GROWN IN MALAYSIA

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Introduction: The glycaemic index (GI) concept is useful for diet planning and identifying foods in the usual Malaysian diet with desired glycaemic effects such as delayed rise in blood glucose and low area under the curve. The purpose of this study was to measure the GI of durian, papaya, pineapple and watermelon that are grown in Malaysia.

Methodology: This was an experimental study done within the Dietetics laboratory, Program in Dietetics, School of Health Sciences, Universiti Sains Malaysia. We selected ten healthy volunteers (5 females and 5 males) and gave 50 g available carbohydrate portions of glucose (reference food) and four test foods (durian, papaya, pineapple and watermelon) in random order after an overnight fast. Glucose was tested on three separate occasions and the test foods were each tested once. Postprandial plasma blood glucose levels were measured for two hours after intake of the test foods and incremental area under the curve (AUC) was calculated for both the test and reference foods. The GI of the test foods was determined by dividing AUC after the test foods by that after glucose.

Results: The results showed that the mean AUC of pineapple was 232±24, papaya was 147±14, watermelon as 139±8 and durian was 124±13. The mean GI of pineapple was 90±9, papaya was 58±6, watermelon was 55±3 and durian was 49± 5. Statistical analysis showed significant difference ($p<0.05$) in AUC between pineapple and the other three foods (durian, papaya and watermelon). The GI of pineapple was also significantly higher than that of the other 3 fruits ($p< 0.05$).

Conclusion: We conclude that pineapple is a high GI food whereas papaya is intermediate and watermelon and durian are low GI foods.

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THE STATUS OF ENVIRONMENTAL HEALTH: WHY MUST WE BE CONCERNED?

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Introduction: Environment can be defined as the circumstances or conditions that surround an organism or group of organisms. Man depends on environment to live and survive. Unfortunately, humans try to change the environment to improve their lives. Thus, many ecosystems were no longer truly 'natural'. What will our environmental be in future? How do we place a value on any of our environment? How can we accomplish the twin goals of improving human wellbeing and protecting our common environment? How long can we continue to foul the earth with the wastes that we produce in industry, agriculture and our homes? What is the maximum number of people the earth can sustain? What use is a city if its air is full of gas and fumes from vehicles that choke the people who live and work in it? All the questions remind us, while there are many things to appreciate and celebrate about in the world which we live in, many pressing environmental problems still cry out for our attention. Today, as the population of an area grows, more food, timber and water has to be produced to feed the extra people. Forests, soil and fish, are being used up faster then they are replaced. Many rare and endangered species are threatened directly or indirectly by human activities. Chemicals and metals used in industrial processes, pesticides, sewage, agricultural and domestic wastes are all dumped into the environment. The damages caused by chemicals to the ozone layer, the warming of the earth caused by the increase in greenhouse gases, and the poisoning of wildlife in rivers and the sea show that the natural processes are being overwhelmed. Although further large-scale habitat loss, environmental degradation and mass extinctions are expected, scientific ecology does not currently predict a 'failure' of global life support mechanisms. As a result, temperatures have increased by between 1.5℃ to 4.5℃, most probably as a result of the increase in greenhouse gases. As the temperature increases, the huge polar ice-cap will begin to melt. This could cause sea-levels to rise by about 1.5 metres over the next 60 years. Low-lying areas will be flooded. Millions of people are likely to lose their lands and homes. But the consequences of global warming will be felt worldwide. The world's climate, vegetation and agricultural patterns will change. Weather conditions will become more extreme, with stronger winds, heavier rain and worse droughts. Areas in which food crops are grown could become too hot and dry to support agriculture. Some communities of plants and animals may disappear altogether.

Methods: Published papers from journals and books on environmental and health were searched and reviewed.

Results: Health, particularly community health, is very much dependent on the environment. Many health problems are caused by unhealthy environments and it is estimated that polluted environments lead to significant health problems and annual losses of billions of dollars of income worldwide. The cause or development of nearly every human disease is at least partly related to environmental factors. Internal genetic factors certainly affect vulnerability to some diseases, but the environment generally has a stronger influence. Most environmental effects are difficult to detect because many years elapse before any symptoms appear. These are called 'chronic' effects. Some events, however, produce a short-term 'acute' effects. For most people in the world, the greatest health threat in the environment is now, as always, from pathogenic organisms. Bacteria, viruses, protozoans, parasitic worms, and other infectious agents probably kill more people each year than other causes of death. Almost part of the human body is affected by one pollutant or another. For example, lead and mercury affect the brain; arsenic, the skin; carbon monoxide, the heart; and fluoride, the bones. Epidemiologists have estimated that 75-80% of all cancers, for example, are caused by environmental conditions, which include diet and smoking. In much of the Third World, diarrhea, dysentery, cholera, typhoid, intestinal worms, tuberculosis and respiratory infections still dominate because of lack of water supplies, sanitation and adequate sewage system. Heart attacks, respiratory diseases, and lung cancer all are significantly higher in people who breathe dirty air, compared to matching groups in cleaner environments. Increases in the number of symptoms, hospitalizations, and deaths from asthma related to air quality have been noted, especially for the elderly and children. Hazardous and toxic wastes, when released into the environment, caused such health problems as birth defects, neurological disorders, reduced resistance to infection, and cancer. There are clear links between the work of the scientist investigating environmental associations with ill health and management of the environment to prevent illness and promote good health.

Conclusion: We must think about the effects that things we have done to our environment have had on our own health. It is very easy for humans to harm the environment, they may profess otherwise, but they still do so. The time has come to stop and think about the effects we are causing to the world. We must learn to take care of our planet; it is the only home we have. We must improve our understanding of the natural environment, including global aspects of environmental problems, which include: awareness and appreciation of the natural and built environment; knowledge of natural systems and ecological concepts; understanding of current environmental issues; and the ability to use critical-thinking and problem-solving skills on environmental issues.

A SIMPLE MODEL FOR TEACHING HUMAN BODY COMPOSITION

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Introduction: Body composition studies have greater importance in the face of its closer relevance to health issues such as obesity, diabetes, cancer, arthritic problems and quality of life and in metabolic and nutrition research. Very little coverage is given in basic medical and health sciences degree curriculum for teaching this fascinating aspect. There are several levels at which body composition estimations in humans are considered based on the requirements of the investigators. However, two or three compartmental level of body composition is good enough for undergraduate teaching. This can be made very interesting, clear and easily understandable by making use of a simple model that depicts body fat, fat free mass or lean body tissue and total body water.

Methods/Results: A four-member team embarked on this project of designing and producing the model under the guidance of the author. Attention was given to keep the cost low without losing the quality of contents that was to be demonstrated. The materials used were ceramic powder, plaster of Paris, used news paper, good quality glue (fevicol) and paint. The first step involved was in making suitable drawings. Based on that, a basic mould was prepared using plaster of Paris up on which three impressions were taken with a paste of ceramic powder, paper pulp and glue. Thorough drying of the mould and impressions were done. Different components of body composition were effectively brought out on each dried impressions with suitable color paintings.

Conclusion: The most important features of this model are that it is least expensive, quite light, easily dismantled and reassembled and transported. If produced on a large scale, it can be further cheaper and help the artisans financially and expose their skill.

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MULTISTATE PROPORTIONAL HAZARDS MODELS FOR LONGITUDINAL DATA FOR DIFFERENT TRANSITION TYPES

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Introduction: The problem of constructing likelihood function for repeated observations emerging from longitudinal data has been a complex issue in statistical modeling. In this paper a more flexible and simplified formulation for likelihood function for longitudinal data is proposed for several states of transition.

Methodology: The underlying hazard functions are expressed as functions of covariates. Then conditional transition probabilities are obtained using the proportional hazard link functions based on the Chapman-Kolmogorov equation. A simplified approach of constructing the likelihood function is demonstrated in this paper to deal with the branching of a number of transition types during a certain study or follow-up period. The estimation and test procedures are also illustrated in this paper. It is noteworthy that the proposed procedure deals with the repeated measures in such a manner that the information on transition types are taken into account very efficiently and effectively and thus the analysis of multistate hazards models become more convenient by reducing the number of underlying models thus implying a great reduction of parameters to be estimated.

Results: For this study, an application is shown using the Health and Retirement Study (HRS) data on depression. The application of the proposed model to the HRS data on depression for six waves during 1992-2002 reveals some interesting results that reflect the underlying differences in making transitions, reverse transitions and repeated transitions for covariates age, sex, education, and ethnicity.

Conclusion: The problem of depression has emerged as a major health concern during the past decades. This problem can have long-term impact in terms of health risk as well as major socio-economic consequences. In some cases, the transitions, reverse transitions as well as repeated transitions to or from the state of depression can be of interest both to the researchers and the health professionals. This paper simplifies the continuous-time and discrete state Markov process model with covariate dependence using Chapman-Kolmogorov equation and shows a more generalized form of the likelihood function in order to cover transitions, reverse transition and repeated transitions for longitudinal data.

Keyword: Multistate Model, Longitudinal Data, Depression, Transitions, Markov Process, Proptional Hazards, Chapman-Kolmogorov Equation

EXAMINING SOME IMPORTANT FEATURES OF THE GENERALIZED ESTIMATING EQUATION MODEL FOR REPEATED BINARY OUTCOMES

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Introduction: The Generalized Estimating Equation (GEE) approach is a useful technique for analyzing longitudinal data whence the outcome variable of interest is repeatedly observed at a number of occasions (follow-ups), thus providing correlated measures. It is a non-likelihood approach that does not require the complete specification of the joint distribution of the repeated responses. Different correlation structures can be specified and compared and the most efficient model identified. Findings from a previous study on the incidence of emotional health problem among the elderly using the GEE approach, showed consistency in results when different correlation structures were used.

Results: Comparing the results to that of the logistic regression model, some important features of the GEE were noted. In this paper, we examine those important features.

Keyword: Generalized Estimating Equation (GEE), Repeated Measures,Correlation Structure

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A MULTISTATE TRANSITION MODEL FOR ANALYZING DISEASES IN ELDERLY POPULATION

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Introduction: In this paper, we considered the transitions to diseases among elderly people employing the competing risk framework of the proportional hazards model. This paper intends to provide useful information regarding the disease pattern among the elderly people and the factors associated with such transitions are identified.

Methodology: An extended hazard model is used in this paper for analyzing longitudinal data on various diseases among elderly people. The Health and Retirement Study data are considered in this paper for the period 1992-2000. The major diseases/complications considered in this paper are: stroke, lung diseases, diabetes mellitus, blood pressure, and arthritis. are considered for a more general framework. The repeated measures on the disease status are taken into account for different waves of data collection. The estimation and test procedures are shown in the paper. The transitions to different diseases/complications are explained by selected covariates such as sex, race, marital status, smoking, drinking, physical exercise and BMI.

Results: The results indicate that sex, race, smoking and BMI are significantly associated with transitions to different diseases/complications. The results are displayed for transitions to each disease/ complication separately for competing risk framework as well as for the combined transition to any of the selected diseases/complications.

Conclusion: The health problem among the elderly people has become an increasingly important issue for both the developing as well as for the developed countries in the world due to the ageing processes in the populations. This requires special attention for a proper health policy in the countries with priority to the needs of the elderly population. This paper reveals some important health issues related to the transitions to the selected diseases/complications among the elderly people and the factors associated with such transitions are identified. This will provide important policy guidelines to the health professionals dealing with the health for the elderly population.

Keyword: Multistate Model, Hazards Model, Competing Risk, Transition to Diseases, Elderly Population

LONGITUDINAL DATA ANALYSIS USING MARKOV CHAIN REGRESSION MODELS

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Introduction: This study considers an extension of Markov chain models to the analysis of longitudinal data.
Methodology: We propose two working models, a first order Markov model and a high order Markov model to analyze the data on change in the perceived health status from poor(0) to good (1) or from good (1) to poor (0) states in successive follow-up periods among a group of individuals. Each model is shown for a binary sequence of outcomes and it further examines the possible linkage between covariates and health status by expressing the transition probabilities as function of potential risk factors. It also includes the effect of interaction terms in explaining the transition in perceived health status during subsequent follow-ups. Thus an attempt is made to test for the nature and direction of the values of the parameters at different types of transitions.
Results &Conclusion: The proposed models and their inference procedures were illustrated by employing the Health and Retirement Study, 1992-2000.

Keyword: Markov regression, High order, Binary sequence, Transition Probabilities

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EXPLAINING VARIABILITY IN HEALTHCARE UTILIZATION BY DISPENSATION-ESTIMATED HEALTH STATUS MEASURE: THE LONG-TERM DISEASE INDEX

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Introduction: The main determinant of an individual's healthcare utilization (HCU) and cost is his/her health status (HS). HS is used as a risk adjuster in risk assessment for capitation payment. Dispensation data represent useful source from which HS can be estimated. The aim of this study is to develop and validate a HCU model that includes the HS as an adjuster.

Methodology: Data were collected retrospectively from computerized databases in University Sains Malaysia (USM) about users of USM healthcare services. A user is a USM health scheme beneficiary who utilized the services at least once in two consecutive academic years. Variables collected were age, gender, race, eligibility type, enrollment period, medications dispensed and number of visits (as a utilization measure). Chronic illnesses medications and some of non-chronic illness medications were used to calculate the long-term disease index (LTDI). Weighted least square method (WLS) was used to develop the model using random 50% of year 1 data and the other 50% were used for validation. Fifty percent of year 2 data was used to study the stability of the model. SPSS version 15.0 was used for analysis.

Results: The distribution of demographic variables as well as the LTDI parameters were similar in both years. Demographic variables explained 15% of variability in utilization among users. Adding the LTDI improved the explanatory power of the model to 36% ($p < 0.001$). Similar contribution of LTDI was noted in the validation as well as in the stability datasets.

Conclusion: LTDI was successfully developed. Healthcare utilization and cost can be well explained and predicted by including the LTDI

ANALYZING INCOMPLETE CATEGORICAL DATA: A LOGISTIC REGRESSION APPROACH

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Introduction: A logistic regression model is presented with y, outcome variable and x, independent variable where y and x are in a matrix form.
Methodology: We consider logistic regression model to estimate the incomplete categorical data especially for two way contingency tables. The possible sources of missing data can be represented in the form of missing row, missing column, and missing row and column. Logistic regression model can be used to estimate missing row or missing column data but not to estimate the missing row and column since x is the independent variable. In our work, we demonstrate the use of the logistic regression model to estimate the missing row, missing column, and also missing row and missing column data by adopting the EM algorithm. In this paper, we consider a set of data from a clinical trial of 59 epileptics, where the number of epileptic seizures was recorded during a baseline period of eight weeks. Patients were randomized to treatment with the anti-epileptic drug progabide or placebo in addition to standard antiepileptics.
Results & Conclusion: The estimation procedure is illustrated in this paper on the basis of the proposed technique of estimating missing values under various assumptions.

Keyword: Incomplete Categorical Data, EM Algorithm, logistic regression model

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HEALTH AND WEALTH: A STATISTICAL ANALYSIS

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Introduction: It is a well known fact that health and wealth of nations are positively correlated. However, recent investigations revealed that health-income relationship is accounted for four components: productivity, education, investment in physical capital and demographic dividend. In this paper, an attempt is made to examine the relative role of these components on health.

Methodology: The study is based on the cross-national data for the period 1980-2005 and the statistical models such as polytomous logistic regression model were fitted with five years time lag between the response variable (health) and the independent variables.

Results: It is noteworthy that education could be singled out as the most dominating factor in explaining health in nations for the period under consideration. In some cases, GDP indicated positive association with health along with significant interaction effect between education and GDP.

Conclusion: In explaining the relationship between health and wealth of nations, the cross-national time series data indicated that education appears to be the most dominating factor in improving the quality of health. Among other components, per capita growth in domestic productivity played a supporting role. This finding has a major policy implication for the developing countries for improving health conditions in countries with limited resources.

A NON-PARAMETRIC MULTISTATE APPROACH FOR ANALYSING LONGITUDINAL DATA

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Methodology: Several transient status of diseases were observed over time and estimates of survival were obtained for a group of elderly individuals that are at risk. The study includes competing risks to identify the role of different risk factors in developing the diseases under multistate framework. The non-parametric estimates were obtained for different causes separately employing the Kaplan – Meier method and then an extension for competing risk was proposed in this paper.
Results & Conclusion: The proposed extensions were applied to the Health and Retirement Survey data for the period 1992 – 2000. Different covariates are also examined through stratified analysis of the survival functions for partially incomplete data.

Keywords: Competing risks, Multistate, non-parametric estimates, stratified analysis.

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SELF-LEARNING INTERACTIVE COMPUTER PACKAGE ON HYPERTENSION

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Introduction: Though students pass most of their time in class room learning, they learn much by self-learning. Self-learning is often depends on the learning materials that are available to them. Many students prefer lecture notes (1). Students read the handout as they are not sure about the sources of information that they need to achieve their learning objectives (2), computer-based up-to-date interactive and click-based contents can be enjoyable, meaningful and may improve learning. Constructive, timely, and relevant feedback and provision of self-assessment may improve their learning (3). In the expanding information overload we expect of students more to learn in the same period of time, it will be of help to the students if learning information are easily available to them.
Objective: To make learning interesting, as if it is playing with the computer, have most of the information relating to the topic easily available, and make it interactive and enabling the user to learn and assess their knowledge on the topic.
Methods & Conclusion: Information relating to hypertension and its management were collected from different text books and journals. Microsoft Visual Basic 6.0 computer programming codes were used to write-up this software to learn about hypertension.

DEPTH DOSE DISTRIBUTION OF 2-HYDROXYETHYLACRYLATE (HEA) POLYMER GEL DOSIMETER USING MRI

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Methodology: The effects of depth-dose different concentrations of cross-linker N,N' methyelene-bis-acrylamide (BIS) from 2% to 4% and 2-hydroxyethylacrylate (HEA) monomer from 2 to 4% at 5% gelatin on the dose response of BIS-HEA- gelatin (BHEAG) aqueous polymer gel dosimeters were studied using magnetic resonance imaging (MRI) for relaxation rate (R_2) of water proton. The dosimeters were irradiated with ^{60}Co teletherapy _-ray source at a constant dose rate, receiving doses up to 30 Gy. The radiation polymerization occurs and increases with increasing dose. Densitometer was used to analyze the dosimetry characteristics of the radiological film obtained from MRI scan.

Results & Conclusion: The optical density was found depend strongly upon the initial concentrations of HEA and BIS. The dose-depth map for BHEAG gel was determined for different concentrations of HEA and BIS. The percentage of depth dose was also evaluated which lead to a good agreement with the ionization chamber measurements.

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RATE OF POLYMERIZATION OF POLYMER GEL DOSIMETER USING 2-HYDROXYETHYLACRYLATE (HEA) AND 2-HYDROXYETHYLMETHACRYLATE (HEMA)

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Methodology: The rate of polymerization of polymer gel dosimeter were investigated using polymer formation of poly2-hydroxyethylacrylate (PHEA) and poly2-hydroxyethylmethacrylate (PHEMA). The effects of different concentrations of cross-linker N,N' methyelene-bis-acrylamide (BIS) from 2% to 5% and monomer 2-hydroxyethylacrylate (HEA) from 2 to 5% for PHEA, monomer 2-hydroxyethylacrylate (HEMA) from 2 to 5% for PHEMA at 5% gelatin on the rate of polymerization of PHEA and PHEMA aqueous polymer gel dosimeters were studied using Raman spectroscopy and nuclear magnetic resonance (NMR). The dosimeters were irradiated with ^{60}Co teletherapy _-ray source at a constant dose rate, receiving doses up to 20 Gy. Raman spectroscopy was used to investigate directly the rate of radio-polymerization, targeting in C=O stretching Raman shift that assigned to PHEAG at vibrational band 1415 cm^{-1} and OH stretching Raman shift that assigned to PHEMA at vibrational band 3358 cm^{-1} NMR spectroscopy was used indirectly to measure the rate of radio-polymerization aiming for relaxation rate (R_2) of water proton.
Results & Conclusion: Half radiation time (t)were found depend strongly on the initial concentration of cross-linker more than monomer concentration.

DEVELOPMENT OF A RELATIONAL DATABASE FOR CODING, STORAGE AND MANAGEMENT OF DOCUMENTS FOR ISO 9001:2000 CERTIFICATION AT INFORMM

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Introduction: On the 15th March 2006, INFORMM announced the implementation of the ISO 9001:2000 standard Quality Management System (QMS) for its R&D, pre-commercialization activities, research facilities and postgraduate training programme in molecular medicine. On the 21st September 2006, INFORMM was awarded ISO certificates from three prestigious accreditation bodies; *viz.* DSM (Department of Standards Malaysia), UKAS (United Kingdom Accreditation Services), and COFRAC (French Committee for Accredition). This was followed by another 3 awards, *viz.* ANAB (American National Accreditation Body), SINCERT (Italian National System for Accreditation) and TGA (German Association for Accreditation) on the 15th January 2007. The objective of this study was to develop a relational database to ease the burden of managing ISO documents for INFORMM's QMS.

Methodology: Filemaker Pro™7 was used to develop the relational database on a desktop computer, and following prototype testing the database was hosted on an Apple Xserve™, that enabled an unlimited number of users access to the database on the USM network. ISO documents that were created in a variety of digital formats, such as MicroSoft Word™, Adobe Illustrator™, Photoshop™ and PDF™, were stored in the database. Each database record consisted of a container field to hold the digital files, as well as fields to hold other details for ISO management, such as document history and coding using an inhouse-developed algorithm.

Results: A total of 340 ISO documents; consisting of 243 Quality Records, 29 Quality Procedures, 62 Reference Documents, 5 Core Procedures and 1 QMS manual, were successfully stored in the server. The server permitted 24/7 access to the database which also permitted data searches, formatting and printing of summary reports with unprecedented accuracy and speed.

Conclusion: The task of securing ISO certification from 6 accreditation bodies within 6-10 months of implementation is a laudable achievement for INFORMM, made possible by a team

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DEVELOPING A COMPELLING 3D ANIMATION AND MULTIMEDIA PRESENTATION USING BLENDER FOR INFORMM'S OPENING CEREMONY

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Introduction: Blender is an open-source software for creating a broad range of 3D content with the advantage of cross-platform operability and small file size. 26th of June 2005 was an auspicious day for INFORMM as it was the second anniversary of the birth of our institute and the official opening of our new building by the Minister of Higher Education, Malaysia. The event was marked by an elaborate opening ceremony which required a multimedia presentation with panache to showcase our new building and convey the message of 'techno savvy'. For the multimedia presentation, we needed a digital 3D model of the building for 3D animation. However, commercial 3D softwares, such as Lightwave™, are very expensive and have a steep learning curve, which made them unsuitable for academic institutions and projects with short deadlines. The main objective of this study was to investigate whether Blender could be used to develop the 3D model and animation; of a quality viewers are accustomed to seeing on TV commercials and movies.

Methodology: Blender version 2.37 was downloaded from the blender website and installed on a Power Macintosh™ G5 computer equipped with Mac OS 10.3.9 and 1MB RAM. Using original architectural drawings of the INFORMM building, a complex 3D model was created and animated using Blender.

Results: A realistic 3D model of INFORMM building was created and animated according to specifications in the storyboard. The output video files were rendered in Blender using Apple's Quicktime™ 7 format, and post-production effects and synchronization with sound track was done using Adobe After Effects™, to produce a 5-minute multimedia presentation.

Conclusion: Compelling multimedia contents incorporating complex 3D models and animation can be produced using Blender. The quality of the multimedia was comparable to commercial productions, but without the high cost. We wholly recommend using Blender for 3D modeling and animation for creating high impact visualization and multimedia presentations.

MULTISTATE SURVIVAL ANALYSIS ON THE PRESENCE OF DIABETES RELATED COMPLICATIONS

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Methodology: This paper illustrates the use of multistate approach to product limit method developed by Islam (1994) under the competing risk framework for diabetes related complications among diabetic patient. The method takes into account of the censored and uncensored survivorship functions separately. To identify the risk factor for the diabetic related complications, an exponential regression model under the competing risk framework were used. Since more than one complication could occur, thus, only the incidences of the first complication among the diabetic patient were considered in the study. The complications are cardiovascular, peripheral vascular, cerebrovascular, ophthalmic, neurologic and renal disease complication.

Keywords: Multistate, competing risk, product Limit Method, exponential regression, diabetes related complications

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DEVELOPMENT OF MALAYSIAN CRANIOFACIAL INFORMATION SYSTEM (MYCIS)

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Introduction: The design and implementation MyCIS (Malaysian Craniofacial Information System), a prototype for querying, visualizing and analysing 3D spatial/geometric data, was built based on geometric morphometric concept and advanced spatial database system. The system can take as input the type of data typically produced by high resolution laser-scanners, photogrammetry surface scanners or surface constructed from CT slice images

Method: Determination of the craniofacial normality or abnormality by measurements obtained from the patients requires a system of quantitative criteria. Then, the statistical methods have been applied to analyze the variation of craniofacial shape and size. Usually, there are two methods used, *multivariate morphometric* and *geometric morphometric*. The first method is based on the measurements (e.g. distances, angles and ratios of the dimensions) between anatomical landmarks and the second is based on the coordinates of the landmarks. In this research, the extra landmarks were made by interpolating correspondence points between a small set of reproducible anatomical landmarks and so a dense correspondence was interpolated across the entire face.

Results: The Multi Resolution Dense Correspondence models and the extensibility of ORDBMS may lead to the creation of 'thin' craniofacial database application since most of the application tasks are performed in the database server via user-defined functions rather than in the application programs. This situation may also reduce the transaction load since the data to be returned to the users are the anthropometric or the geometric morphometric analysis result instead of the whole data to be analysed.

Conclusion: Through the test study, the methodology has been demonstrated to be an efficient approach to the development of Malaysian craniofacial information system (MyCIS). It is expected that the system can be implemented in practice as a prototype for the initial development of craniofacial database and information system in Malaysia.

POROUS HYDROXYAPATITE-LACTIDE/GLYCOLIDE (PLGA) COPOLYMERS COMPOSITES FOR BONE SUBSTITUTES AND CONTROLLED DRUG RELEASING AGENTS

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Introduction: Biomedical devices made of porous hydroxyapatite (HA) bonded with a biodegradable lactide/glycolide (PLGA) copolymer as the matrix have been developed. This device is expected to be useful as an excellent bone graft with bioactive hydroxyapatite which will facilitate new bone formation and at the same time it could functions as drug delivery with a controlled release rate. In this preliminary report, we wish to present preparation and physical characterization of the biomedical composite and the non-biodegradable porous hydroxyapatite composing the matrix of the composite.
Methodology: Porous hydroxyapatite was prepared via polymeric sponge method using commercial hydroxyapatite powders. Suspensions of the hydroxyapatite powders were prepared with an adjusted loading of hydroxyapatite, using a dispersant. After soaking cellulosic sponges into the suspension, the sponges were dried and then subjected to heat-treatment at 600°C followed by sintering at 1200°C. Three types of porous hydroxyapatite samples have been prepared in various composition of hydroxyapatite suspension. Porous hydroxyapatite bodies produced from slurry with less hydroxyapatite powder content and more dispersant amount yielded higher porosity and thus causing weaker compressive strength. Their compressive strengths varied from 3.2, 4.3 and 6.4 MPa and increased to 5.4, 5.6, and 9.3 MPa, respectively, after coating with PLGA solution.
Conclusion: Porosity plays important role in PLGA loading; the amount of the polymer coated on the porous hydroxyapatite bodies depend on the porosity of the porous HA and the concentration of the polymer solution. The higher porosity the more PLGA can be absorbed by the porous body.

Keywords: Biomedical composite, PLGA, porous hydroxyapatite, physical characterization.

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DETERMINATION OF THE MOTHERS' KNOWLEDGE, ABOUT ORODENTAL HEALTH OF THEIR 1-6 YEARS OLD CHILDREN IN THOSE REFERRED TO MEDICAL CENTERS OF ZAHEDAN CITY 1385

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Introduction: Health community pledged to have healthy children. Consideration to orodental health is one basic point for maintaining children health. Orodental care must begin from childhood period because with performing special cares of milk teeth in children, we can expect to grow permanent and correct teeth in them. Family along with special organization can achieve to community health through teaching and health activities. The aim of this research was to investigate mothers' knowledge about orodental health in 1-6 years children.

Materials and methods: This was a cross-sectional research. Five hundreds mothers of 1-6 years old children, were selected by random sampling method. Questionnaires with interviews were used as tools for data gathering. Data was analyzed by SPSS software.

Findings: Findings demonstrated that 8.6% of mothers had weak knowledge, 44% had moderate knowledge and 47.4% had good knowledge about orodental health. There were a significant statistical relation between knowledge and mothers age, mothers' education, children ages economic situation and staying areas.

Discussion: Considering that mothers had inappropriate knowledge about children orodental health, we advised that problems due to lack of knowledge explained for clients by experts and health educationalists.

Keyword: Knowledge, orodental health, children

PROPOSING POTENTIAL LEAD MOLECULES AGAINST HEMAGGLUTININ PROTEIN OF INFLUENZA VIRUS EMPLOYING IN SILICO APPROACH

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Introduction: Hemagglutinin & neuraminidase are the two surface proteins responsible for infection by *influenza* virus. To date, neuraminidase has been the major target for drugs against the virus[1]. Since hemagglutinin is the protein that mediates binding of the virus to target cells through sialic acid residues on host cell-surface[2], we propose potential lead molecules against active site of hemagglutinin of *influenza* virus.

Methodology: Hemagglutinin of H5 avian influenza (PDB ID: 1JSN) is used as the receptor protein. 3 sets of 500 ligands each are generated by structure based *de novo* ligand generation using LigBuilder. 900 ligands are obtained from ZINC database search. Tetrahydropyran ring is used as the seed molecule for both the approaches. 11,104 stereoisomers in total are generated and docked into the active site of the receptor using 'High Throughput Virtual Screening'. The poses passing the energy filters are ranked based on their score.

Results: 45 Physically significant descriptors and pharmaceutically relevant properties of top 10% of the molecules from each set are then calculated. Only 64 molecules satisfy the ADME-Tox criteria of which 16 are from *de novo* ligand generation approach.

Conclusion: These molecules can now be studied in vivo to validate the *in silico* results. As the molecules are already screened for ADME-Tox properties, the probability of obtaining the successful lead molecule among these is very high.

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THE USE OF DUAL RECOMBINANT ANTIGENS FOR IMPROVED SENSITIVITY IN DIAGNOSIS OF HUMAN TOXOCARIASIS

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Introduction: Current laboratory diagnosis for toxocariasis relies heavily on TES (*toxocara* excretory-secretory)-based serological tests. Since TES production is limited due to the capacity of parasite culture, the use of recombinant antigens which can be produced in unlimited amounts, offers a good alternative for diagnosis of toxocariasis. However, more studies are needed in establishing robust, sensitive and specific recombinant antigen-based assays for diagnosis of toxocariasis, especially for use in the helminth-prevalent tropical countries. In striving towards this goal, we have developed an IgG4-ELISA which employs TES-30 (rTES-30) and TES-120 (rTES-120) recombinant antigens. Both these recombinant antigens have been previously reported to be of potential diagnostic value.

Methodology: The TES-30 gene was previously cloned; while the TES-120 gene was cloned via RT-PCR, subcloned into a His-tagged prokaryotic expression vector and expressed in *E.coli*. The recombinant proteins were subsequently purified by affinity chromatography using Ni-NTA resin. The diagnostic utility of each purified recombinant antigen (rTES30 and rTES120) and a combination of these two recombinant antigens were evaluated by IgG4-ELISA using 28 serum samples from patients infected with *Toxocara*.

Results: rTES30-ELISA and rTES120-ELISA showed sensitivity of 92.3% and 92.8% and specificity of 94.2% and 93.8% respectively for diagnosis of toxocariasis. In 9 out of the 28 (32%) serum samples, the optical densities shown by the two recombinant antigens were significantly different. However when the results of both recombinant antigens were employed in the analysis of the sensitivity of the assay, all 28 samples displayed positive results (100% sensitive). Thus, consideration of the results of both recombinant antigens was shown to improve the diagnosis of toxocariasis.

Conclusion: In conclusion, our results demonstrated that a diagnostic test which employs dual recombinant antigens namely rTES-30 and rTES-120, allows for the establishment of a more sensitive and robust test as compared to a test which is based on single recombinant antigens.

FLT3 GENE INTERNAL TANDEM DUPLICATION IN ADULT ACUTE MYELOID LEUKEMIA PATIENTS

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Introduction: FMS like tyrosine kinase (FLT3) gene has a significant role in blood cells. Over expression of FLT3 RNA and protein in acute myeloid leukemia (AML) play an important role in the survival and proliferation of leukemia cells. The study was aimed to determine the frequency of mutation of FLT3 gene in AML patients and to correlate mutation pattern with clinical characteristics.

Methodology: Blood samples were collected from each AML patients in acid citrate dextrose (ACD) solution and the mononuclear cell separation was done by Ficoll density gradient centrifugation. DNA isolation was done using TRI reagent. FLT3 gene internal tandem duplications were determined by polymerase chain reaction and agarose gel electrophoresis.

Results: Among the 150 patients analysed, 29% had FLT3 internal tandem duplication. Total white blood cell count and serum lactate dehydrogenase (LDH) levels were notably increased in patients harboring mutated FLT3. Other parameters like bone marrow/ peripheral blood blast %, serum glutamate pyruvate transaminase (SGPT) and serum glutamate oxaloacetate transaminase (SGOT) levels showed only marginal elevation. There were no associations between various clinical features like cervical lymphadenopathy and organomegaly and mutation status of FLT3. Highest mutation rate was observed in acute myelomonocytic leukemia (AML-M4). AML patients stratified by treatment regimen showed that 71% of patients with FLT3 mutation were getting high doses of chemotherapy. No remission was observed in 73 % of FLT3 gene mutated patients.

Conclusion: The study shows strong association of clinical and therapeutic parameters with FLT3 gene mutations. FLT3 gene mutations play a major role in the prognosis and treatment strategy of AML patients.

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EXPERIMENTAL RNOMICS: A NEW AND IMPROVED METHOD FOR THE IDENTIFICATION AND CHARACTERIZATION OF NON-PROTEIN-CODING RNAS

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Introduction: Small-non-protein-coding RNAs (snpcRNAs) perform important roles in various cellular functions and have been shown to be perturbed in cancer and other diseases. Their identification and characterization are difficult as they do not possess sequence features related to protein coding genes. Experimental RNomic systematic searches of npcRNA via cDNA libray construction has led to numerous discoveries in several organisms. However, this method has the disadvantage of detecting novel npcRNA with truncated 5´-ends, and in missing out the abundant and important family of micro-RNAs (sizes below 30nt long). We report here an improved method that could rectify this problem.

Methodology: In order to detect micro RNA species, we size select RNA from 10-500nt for cDNA library construction. To detect full-length RNA, we applied the strategy of ligating a DNA oligonucleotide to the 5'-end of the RNA that was modified with a propanol residue. These 5'-ligated RNA is then reverse transcribed into cDNA and cloned into a vector. The cDNA were sequenced, aligned and blasted against Genebank to determine its location. Northern blot analysis is carried out to determine the expression pattern and to determine the sizes RNA on these npcRNA candidates.

Results: Two cDNA libraries (from *Salmonella typhi* and *Plasmodium falciparum*) representing npcRNAs were constructed. The sizes of detected npcRNAs candidate from cDNA sequencing showed good correlation with Northern blot analysis suggesting the detection of full-length RNA. Seven micro RNA species were detected from *P. falciparum* cDNA library, suggesting the method could be used for the detection of microRNAs.

Conclusion: The improved method was successful by used to identify full-length npcRNA and microRNA. The method can be applied to any organism and cells for identification of novel npcRNAs towards the understanding of cell functions as well as in pathogenesis pathway.

ROLE OF PROTEIN KINASE C IN HYDROXYAPATITE-INDUCED PHAGOCYTOSIS BY A MURINE MACROPHAGE CELL LINE (RAW264.7)

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Introduction: The aim of this study was to determine the role of protein kinase C (PKC) in hydroxyapatite (HA) induced phagocytosis by a murine macrophage cell line (RAW 264.7).

Methods: The cells were incubated with HA particles at various incubation time and the levels of PKC activity was determined from the cell lysate. To determine the role of PKC, HA particles were incubated with the cells pre-treated with the various concentrations of bisindolylmaleimide, a PKC inhibitor, and phagocytosis was then assessed at 60 minutes. Latex beads were used as a control.

Results: Our results showed that following incubation with HA particles, the levels of PKC activity in RAW264.7 cells was highest at 7 minutes and then decreased to reach the baseline levels of the controls at 30 minutes. Pre-treatment of the cells with bisindolylmaleimide significantly reduced phagocytosis of HA particle in a dose dependent pattern.

Conclusion: The results of the present study suggest that ingestion of HA by RAW264.7 cells may be dependent on PKC activity that may act, in the early stages of phagocytosis.

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EXPERIMENTAL RNOMICS DETECTS NOVEL SNORNAS IN PLASMODIUM FALCIPARUM

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Introduction: Small nucleolar RNAs (snoRNAs) form a family of newly discovered non-protein-coding RNAs (npcRNAs), they have been found to play important roles in rRNA, tRNA, snRNAs, and even mRNA modification and processing. All snoRNAs fall in two categories, box C/D snoRNAs and box H/ACA snoRNAs, according to their distinct sequence and secondary structure features. Box C/D snoRNAs and box H/ACA snoRNAs mainly function in guiding 2'-O-ribose methylation and pseudouridilation, respectively. Recent studies also suggest snoRNA are involve in clinical syndrome such as Prader-Willi syndrome or Dyskeratosis congenital. However, snoRNA has not been reported By RNomic approach, we aim to identify and charactetize npcRNAs from malaria parasite, *Plasmodium falciparum.*

Methodology: We constructed a specialized cDNA library representing npcRNAs (10-500nt in size) of *Plasmodium falciparum*. cDNAs were sequenced, assembled into contigs and blasted for genome localization. Secondary structure of these RNAs was determined by Mfold programe. Northern blot analysis was carried out to determine their expression patterns. Preliminary, a total of 200 clones were sequenced.

Results: Amongst the detected RNA species, 35% were mitochondrial derived, 21 % un-annotated, 3% hypothetical proteins, 31 % rRNAs and 11 % scRNAs. We discovered 3 npcRNAs that are the first snoRNAs ever reported in *Plasmodium falciparum* belonging to C/D box (Pfa-snoR14 and Pfa-snoR24) and H/ACA (Pfa-snoR16) box family. Pfa-snoR24 is predicted to guide methylation of 18S rRNAs whereas Pfa-snoR14 is predicted to guide methylation on 18S rRNA which is expressed only in mosquito (S-type rRNA) suggesting that this methylation may play a role in malaria infection. Pfa-snoR16 appeared as likely rRNA pseudouridylation guide, and feature single, long stem positioning upstream from ACA box motif. It resembled Archael and Trypanosomal H/ACA snoRNAs that also have a single hairpin structure. Their expression patterns were confirmed by Northern blot analysis.

Conclusion: Experimental RNomic detects 3 novel species of C/D (2 species) and H/ACA (1 species) snoRNA, further characterization of these 3 news snoRNAs will be carried out to determine their functions. Further sequencing more colonies could reveal a wealth of novel npcRNA that may play important role in disease pathway of malaria.

HEPATOCYTE NUCLEAR FACTOR 4 ALPHA POLYMORPHISMS IN TYPE-2 DIABETES MELLITUS

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Introduction: Polymorphisms in transcription factor hepatocyte nuclear factor-4 alpha (HNF-4 alpha) have been reported to associate with type 2 diabetes mellitus (T2DM). In this study, we search for the association of single nucleotide polymorphisms (SNPs) of HNF-4 alpha, rs1884614, rs1885088, rs1028583, rs4810424 and rs6031552 in type 2 diabetes mellitus in Malaysia with metabolic features and without metabolic features.

Methodology: Six hundred and sixty subjects were included in this study, three hundred sixty six were T2DM with metabolic syndrome features and one hundred thirty four were without metabolic syndrome features, both groups received treatment at Hospital Universiti Kebangsaan Malaysia, and one hundred sixty were healthy people in Klang Valley, Kuala Lumpur, Malaysia.

Results: We found that rs1885088 is associated with T2DM with or without metabolic syndrome features (allele frequency 0.04 and 0.02 respectively verses 0.01 normal subjects, odds ratio 7.2 and 3.6) however, rs6031552, and rs4810424 are associated with T2DM without metabolic syndrome features (allele frequencies 0.12 and 0.54 verses 0.09 and 0.5 normal subjects respectively odds ratio 1.37 and 1.24). Whereas rs1028583 and rs1884614 are not significantly associated with T2DM.

Conclusion: These results show that HNF-4 alpha single nucleotide polymorphisms associate with type 2 diabetes mellitus in Malaysia with or without metabolic syndrome features.

Keywords: hepatocyte nuclear factor-4 alpha, single nucleotide polymorphisms, type 2 diabetes mellitus

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ENDOTHELIAL NITRIC OXIDE SYNTHASE, ANGIOTENSINOGEN AND ALDOSTERONE SYNTHASE GENE POLYMORPHISMS IN TYPE 2 DIABETES MELLITUS AND THEIR ASSOCIATION WITH ARTERIAL STIFFNESS

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Introduction: The objective of the present study was to determine the prevalence of endothelial nitric oxide synthase (eNOS) G894T, angiotensinogen (AGT) M235T and aldosterone synthase (CYP11B2) T344C polymorphisms in type 2 diabetes mellitus (T2 DM) and their association with arterial stiffness.

Method: The study involved 194 T2 DM and 190 control subjects. Arterial stiffness was measured as aortic augmentation index (AIx) by Sphygmocor PWA system. The genotyping was done with previously described PCR-RFLP methods. Allele frequencies were determined and association between AIx and polymorphisms among different populations was determined by ANCOVA.

Results: There were no significant difference between genotype distribution of G894T, M235T and T344C polymorphisms between T2 DM and control subjects. The G894T polymorphism did not influence the blood pressure (BP) in both groups but it was significantly associated with increased AIx in diabetic patients (p=0.020). The T344C polymorphism was significantly associated with SBP (p=0.009) and DBP (p=0.059) in diabetic patients only while no association was found with AIx in both groups. The M235T polymorphism was not associated with BP and AIx in T2 DM and control groups.

Conclusion: The G894T, M235T and T344C polymorphism were not associated with T2 DM. G894T and T344C polymorphisms had an effect on AIx and BP respectively in T2 DM patients.

PRESENCE OF SINGLE NUCLEOTIDE POLYMORPHISM AT POSITION -34 (C/T) IN PATIENTS WITH RELAPSING VISCERAL LEISHMANIASIS

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Introduction: Infections in humans by Leishmania parasites can result in fatality, visceral leishmaniasis (VL), or in a self-limiting asymptomatic infection. The pattern of IL-4 and IFN-_ response is polarized in leishmania patients. The balance between the parasitic-specific T-cell response plays an important regulatory role in determining the outcome of Leishmania infections in humans. Preferential activation of IL-4 producing Th_2 cells may be involved in the exacerbation of human VL due to the key role of IL-4 in switching cellular immune response towards homoral immunity. Considering elevated serum level of IL-4 in patients with relapsing VL, we aimed to study genetic polymorphism of IL-4 promoter region as a suggestive candidate fragment for controlling IL-4 level in relapsing VL.

Materials and Methods: Peripheral blood samples were obtained from patients with relapsing VL who had elevated IL-4 serum concentration. The genomic DNA was extracted and the regulatory region of IL-4 was amplified using PCR technique using primers covering IL-4 promoter region for about 1200 bp long. Finally, the amplified DNA was examined by sequence analysis.

Result: Sequence analysis of the amplified DNA showed the single nucleotide polymorphism (SNP) at position -34 (C/T) counting from the first ATG codon located on exon 1.

Conclusion: Many genetic studies have confirmed significant roles of heritability in host immune responses against infections. Furthermore, several investigators have revealed that IL-4 is an anti-inflammatory cytokine that its serum level can influence the recovery from infections, especially from intracellular pathogens. The serum level of IL-4 results from polymorphisms in the promoter region of this gene. Previous studies showed that the -34 (C/T) polymorphism increases IL-4 transcriptional activity which causes a raise in serum concentration of IL-4. The high serum level of IL-4 in patients with relapsing VL and the occurrence of SNP (C/T) at position -34 showed that this SNP could result in unfavorable outcome in VL. This is a promising finding for further studies to examine the role of other regulatory parts of Th_1/Th_2 balancing cytokines in VL.

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SURVEY ON INFECTION RATE TO BRUCELLOSIS AMONG TABRIZ SLAUGHTER HOUSE STAFF

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Introduction: Brucellosis is an endemic anthropozoonotic disease in most Middle East countries including Iran. Brucellosis in human populations result in decrease of human efficiency, high cost and long periods of treatment. It causes considerable loss of economy, particularly in the rural areas. Humans, sheep, goats, cattle and buffalo have been involved. Moreover, limited efforts have been reported concerning the control and eradication of the disease among cows and sheep in some restricted areas. Hence any strategic planning for the control or eradication of this devastating anthropozoonotic disease in the country should be implemented regionally and not just locally. Brucellosis is a worldwide disease particularly in Near East, Middle East, Iraq, Turkey, Syria, Jordan and Iran, including East Azerbaijan (Tabriz). It is considered a great challenge to the development of dairy production in developing countries. It is one of the most economically devastating diseases, which causes great losses among the offspring and causes health problems in the rural and urban population, due to either contact with the infected materials or consumption of contaminated dairy products.

Materials and Methods: In this case study, a total of 84 blood samples were obtained from slaugherers and employers of cow and sheep lines from Tabriz slaughter houses. They were investigated using the Rose Bengal plate agglutination test and tube agglutination test for detection of brucellosis.

Results: The results will be presented in the congress

Conclusion: The results showed that persons (slaughters) who have direct contact with cows or sheep corpses were exposed to Brucellosis. M. Geranmaie reported 14.28% infected rate in Tabriz slaughter houses in the same year. As Brucellosis is zoonotic in nature, control of the disease in humans will require controlling this disease among farm animals.

EFFECT OF KACIP FATIMAH (LABISIA PUMILA) WATER EXTRACT ON MAMMOGRAPHIC DENSITY – A PILOT STUDY

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Introduction: Kacip Fatimah is a traditional herb that contains phytoestrogen and is commonly used by Malay population in Malaysia to treat various gynecological illnesses. It is also used as 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. Our purpose was to evaluate the effect of Kacip Fatimah (Labisia pumila) water extract on mammographic density in postmenopausal women.

Methodology: 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 140mg/day, 280mg/day, 560mg/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, 140mg group, 280mg group and 560mg group, respectively. These values were not significantly different from one another. This small increase in breast density might be due to the fact that phytoestrogen is a weak estrogen.

Conclusion: Kacip Fatimah did not significantly affect the mammographic density.

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PREDICTORS OF SMOKING AND QUITTING BEHAVIOURS AMONG MALAYSIAN ADULT SMOKERS

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Introduction: By the year 2020 worldwide tobacco-related deaths are estimated to reach 10 million every year, two thirds of which will be in the developing countries. Smoking and quitting behaviours are important determinants of tobacco mortality and morbidity. We report heaviness of smoking, perception of addiction, quitting intention and quitting attempts among adult Malaysian smokers who had been surveyed during the year 2005 as a part of the International Tobacco Control (ITC) Policy evaluation Project. Our aim was to identify demographic, socioeconomic and product- related factors that were associated with different smoking and quitting behaviours.

Methodology: 2006 adult smokers were surveyed by face to face household's interview using standardized questionnaire. Chi-square, binary logistic & multiple logistic regression statistics were used to test association whenever applicable. Odds ratios and 95% confidence interval were computed for each predictor variable. P value < 0.05 was considered statistically significant.

Results; Christian (OR= 1.69), non-professionals (OR= 1.89), those who were from urban regions (OR= 1.43) and those who smoke regular (none flavoured) cigarettes (OR= 1.61) were more likely to consider themselves addicted to cigarette compared to their counterpart groups. Females (OR= 0.65), Buddhists (OR= 0.61), those who were from urban regions (OR= 0.75) and those who smoke light cigarettes (OR= 0.78) were less likely to have previous quitting attempts. Muslims were higher in doing quitting attempts (OR= 1.36) whereas; Buddhists were higher in their heaviness of smoking (OR= 1.85).

Conclusion: Different factors were associated with smoking and quitting behaviours of the adult Malaysian smokers. Those who were heavier in smoking and those who considered themselves addicted were less likely to have quit intention or quitting attempts.

DIABETES CONTROL: A QUALITATIVE EXPLORATION OF PERCEPTIONS IN MALAY PATIENTS

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Introduction: Adequate blood glucose control is vital in diabetes management to prevent complications. Yet, despite the various interventions, diabetes control remains a global problem to health care professionals (HCPs). To enhance understanding from patients' own point of view, a qualitative study was embarked to explore the perspectives of Type 2 diabetes patients with regard to the factors for lack of diabetes control.

Methodology: In depth interviews were carried out via purposeful sampling in 18 Malay patients (age range= 15-75 years-; male= 9; female= 9) in Endocrinology Clinic at a teaching hospital in Malaysia. The transcribed interviews were subjected to grounded theory (thematic) analysis. NVivo v.2 was used to enhance data management and analysis. Modified Adherence Model was used to identify the contributory factors raised during interviews.

Results: The most dominant and consistently emerging themes from interviews were condition-related factors such as the nature of diabetes and duration of illness which were perceived as barriers to complying with treatment. Patients believed that as diabetes is a silent disease and does not manifest itself long after it has been diagnosed, they were unaware that they had diabetes until they suffered the complications of the disease. Patients with longer duration of illness or "veterans" were more experienced in controlling their diabetes while those who were recently diagnosed were initially able to control it but lost interest and cited reasons such as social obligations and external factors prevented them to be more adherent to treatment. However, by reducing some of the barriers, some patients reported better ability to practice diabetes care.

Conclusions: This study has uncovered the perceived beliefs of Malay Type 2 diabetes patients which led to lack of diabetes control. Therefore more efforts should be generated to implement the forwarded recommendations in order to achieve more desirable diabetes control rates in these cohorts.

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BILATERAL VARIANTS OF THE SUPERFICIAL PALMAR ARCH

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Introduction: Knowledge of the vascular patterns of the hand has gained more importance with improvements in microsurgical techniques in reconstructive hand surgery.
During routine dissection of the hand of a male cadaver we had observed a novel variation of the Group I type of Superficial Palmar Arch (SPA) in the left hand and a variation of the arterial supply of the right thumb forming a unique arterial circle at its base. Such unique arterial variations on both the hands, to our knowledge have not been reported so far.

Case Report: The left ulnar artery after giving off the deep branch continued as the SPA with normal branches but gave arteria radialis indicis and princeps pollicis branches. The arteria princeps pollicis was uniquely tortuous at its beginning and was supplemented by the 1st dorsal metacarpal branch of the radial artery at the wrist. The thinned out terminal part of the SPA supplied the thenar muscles to compensate the absence of the superficial palmar branch from the radial artery. The right SPA had usual branches in the palm, but its terminal part anastomosed with an enlarged superficial palmar branch of the radial artery which also furnished princeps pollicis and radialis indicis branches. The princeps pollicis branch was joined by an unusual supplementary branch from the 1st dorsal metacarpal artery thereby constructing a unique arterial circle at the base of the thumb.

Conclusion: Thus the left SPA was completed by the 1st dorsal metacarpal artery at the base of the left thumb forming a novel subtype of Group I Type of SPA and indicating a classic ulnar dominance. Arterial circle at the base of the right thumb is a special source of information for vascular surgeons harvesting radial arteries (which could be regarded as a safe with the presence of collaterals around the thumb) and while performing arterial interventions including radial artery cannulation, for plastic surgeons in forming radial forearm flaps and orthopaedicians in thumb surgery.

CLINICAL IMPORTANCE OF THE ANATOMICAL VARIABILITY OF SUPERFICIAL PERONEAL NERVE IN THE LEG AND FOOT – A Case Report.

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Introduction: The aim of this report is to refine further knowledge on the cutaneous distribution pattern of the superficial peroneal nerve in the lower 3rd of the leg and in the dorsum of the foot.

Case report: Superficial peroneal nerve after supplying the peroneal muscles, gave a medial cutaneous branch which pierced the deep fascia between the flexor digitorum longus and peroneous longus tendons to emerge in the middle of the anterior compartment of the leg. This branch descended in front of the middle of the ankle to the dorsum of the foot and branched to supply the whole of the medial side of the great toe, the medial side of the 1st metatarsal region and the 1st web space. Superficial peroneal nerve continued in the peroneal tunnel in the anterior intermuscular septum, about 2.5cm, above the ankle joint it pierced the deep fascia to descend in front of the lateral malleous to enter the lateral aspect of the dorsum of the foot. It divided into medial and lateral terminal branches to supply the adjacent sides of the 2nd, 3rd, 4th, 5th toes and lateral side of the little toe.

Conclusion: Identifying and locating the Superficial Peroneal nerve in this region is mandatory:

a) when either the deep or superficial peroneal nerve must be resected in the treatment of pain on the dorsum of the foot.
b) whenever neurolysis is required.
c) during fasciotomy, done for compression syndromes of the branches of common peroneal nerve frequently occurring primary or secondary to trauma or surgery.
d) during elevation of fasciocutaneous flaps or fibular flaps.

Clinical implication of anatomical variations of Superficial peroneal nerve are of utmost importance to surgeons during surgery as they must be aware of such variable branching pattern of the nerve and its distribution in the leg and dorsum of the foot.

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MUSCULAR VARIATION IN THE NECK OF A MALE MALAYSIAN CADAVER.

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Introduction: Entrapment of the neurovascular bundle in the neck may occur in scalene triangle and costoclavicular region; by abnormal muscular architecture.

Case report: During routine dissection we found an anatomical variation of muscular boundaries of posterior triangle of the neck. The upper part of trapezius is broader and is attached to medial half of superior nuchal line and is mostly fibrous in origin. Upper part of sternocleidomastoid is also broader and is attached to the lateral half of superior nuchal line. As a result, both trapezius and sternocleidomastoid muscles are in contact forming a single muscle sheet in the upper half of the neck. At their junction the posterior external jugular vein was descending to enter the posterior triangle. The apex of the posterior triangle does not extend above the middle of the neck. Attachments of the two muscles to the clavicle is more extensive and results in the reduction of the size of the posterior triangle. Both the muscles had greater connective tissue components between the muscular fasiculi.

Conclusion: The cleido-occipitalis part of the trapezius in our case was larger and it over laps the third part of subclavian artery and lower trunk of brachial plexus. This can entrap the lower trunk of brachial plexus leading to “thoracic outlet syndrome”. The upper part of brachial plexus is overlapped by the upper expanded part of sternocleidomastoid, it can compress the plexus, leading to “cervical outlet syndrome”. Chronic tension type headache usually arises from the trigger points in the upper half of the trapezius muscle, because of the fusion of trapezius and sternocleidomastoid muscles in their upper half. It may also arise from certain trigger points in the sternocleidomastoid muscle. Such abnormal muscular variation may lead to torticollis of the neck and subluxation of the atlanto-occipital joint on that side.

CHARACTERISTICS OF ADULT MALAYSIAN SMOKERS WHO WERE SMOKING MENTHOLATED CIGARETTES, REASONS FOR CHOICE AND ASSOCIATED BELIEFS

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Introduction: We aimed from the present study to identify demographic and socioeconomic characteristics of smokers who smoke mentholated cigarettes compared with those who smoke regular or other flavored types. We were interested also in determining reasons for choice, and perceptions associated with smoking mentholated cigarettes.

Methodology: This was a part of the ITC- Malaysian survey for the year 2005 (first wave). 2006 adult smokers were surveyed by face to face household's interview using standardized questionnaire. Chi-square & binary logistic statistics were used to test association whenever applicable. Odds ratios and 95% confidence interval were computed for each predictor variable. P value < 0.05 was considered statistically significant.

Results: 15.7% of the surveyed smokers were smoking mentholated cigarettes. Females were almost three times more likely, than males, to smoke mentholated cigarettes (OR= 2.83). Decision to smoke specific type of cigarette was more likely based on price among mentholated smokers compared to those who smoke regular or other flavored cigarettes (OR= 1.34). Smoking mentholated cigarettes was more likely associated with perceptions and believes like "menthol is smoother on throat and chest" and "mentholated is less harmful than non-mentholated" (ORs= 3.87 & 4.50, respectively). Those who smoke mentholated cigarettes were more likely to have previous quitting attempts (OR= 1.325) compared to those who smoke other types.

Conclusion: Smoking mentholated cigarettes was more likely associated with deceiving believes and perceptions about safety of menthol. Women were at higher risk of being engaged in smoking mentholated cigarettes than men, which is consistent with tobacco manufacturers' strategies.

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DISTRIBUTION OF THE RISK FACTORS AMONG THE CORONARY HEART DISEASE PATIENTS ADMITTED IN IPOH GENERAL HOSPITAL.

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Introduction: Coronary Heart Disease (CHD) refers to a group of closely related syndrome caused by imbalance between the myocardial oxygen demand and the blood supply. It is considered as the single most common cause of death in economically developed countries including Malaysia. But some of the conventional risk factors for CHD are believed to be modifiable.

Methodology: This was a cross-sectional retrospective study and the objective of this study was to demonstrate the distribution of blood lipids and other conventional risk factors of the CHD patients. The data were collected with a pre-designed data collection sheet from the Record Unit of Ipoh General Hospital, of all the patient's admitted during the period of October 01, 2005 to December 31, 2005.

Results: There were 160 CHD patients admitted in the Hospital during the period of study. About 69% of the patients were male, and most (85.7%) of the patients were 50 & above age groups. The highest number of patients was Malay (47.5%). Among all the patients, 50% had high total cholesterol level, about 16% had high LDL level, 41.25% had low HDL with higher risk to develop CHD, and about 59% of the total patients had high TG level. The largest percentage (53.8%) of the patients had hypertension, and most of the patients were either smokers (43.1%) or ex-smokers (22.5%). 57% of the patients were diabetic and 60.6% had family history of CHD.

Conclusion: All of the tested conventional risk factors for CHD were found to play important roles. Therefore, early identification and assessment of risk factors can help in primary prevention, and guide the intensity of efforts to reduce the development of CHD in Malaysian population.

STUDY OF PREVALENCE KNOWLEDGE, ATTITUDE AND PRACTICE AMONG HUSBANDS TOWARDS FAMILY PLANNING IN MUKALLA, YEMEN.

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Introduction: Only 21% of Yemeni women practice modern family planning, when the growth rate has reached 3.4% per year and total fertility rate is 4.7. Family planning services are currently available and accessible to most women in Yemen. Involving husbands in family planning programs may help enhance family planning practice among Yemeni women. The objective of this study is to determine the knowledge, attitude and practice regarding family planning among Yemeni husbands in Mukalla,Yemen. This study will help in the understanding of family planning practice in Yemen.

Methods: A cross sectional study was conducted among 400 husbands in Mukalla,Yemen. The husbands were chosen from randomly selected households and interviewed using a prepared questionnaire. Data analysis was done using SPSS version12.0.

Results: Only 44 (11.0 %) of the Yemeni husbands and 83 (20.75 %) of the wives practice modern family planning methods. The condom was the most common method used by the husbands (88.6%) while the pill was the most common method used by the wives (54.2 %) followed closely by intra-uterine devices (43.4 %).
More than 90% of the husbands knew about pills, intra-uterine devices and condoms. Nearly all husbands (94.8%) have positive attitudes towards family planning and agreed that modern family planning methods are more effective than traditional methods. How ever, 304 husbands (76.1 %) felt that family planning methods should be used by the wife only. Only 46 husbands (11.5%) felt husbands should use family planning.. About 354 husbands (86.3 %) believed that the decision regarding use of family planning methods should be decided by husbands and only 13 husbands (3.3 %) felt the wife only should be the one deciding on using family planning. The remainder (10.4%) felt it should be a joint decision by both husband and wife.

Conclusion: Family planning programs in Yemen should focus on Yemeni husbands to provide approval and support to their wives to be joint decision makers in use of modern family planning methods. This can be achieved through targeted family planning education and promotion programs to Yemeni husbands.

Keywords: family planning, husband, Yemen, contraception.

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SKELETAL AGE ASSESSMENT: COMPARISON BETWEEN SONOGRAPHIC METHOD AND STANDARD RADIOGRAPHIC METHOD IN NORMAL CHILDREN IN HUSM KUBANG KERIAN KELANTAN

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Introduction: Skeletal age assessment is important in the assessment of bone maturation in pediatric patient. The most commonly used method is the posteroanterior radiograph of left hand and compare with standard atlas of Greulich and Pyle. Objective of this study is to compare between sonographic and standard radiographic method in the assessment of skeletal age.

Methodology: Twenty four normal children were evaluated for bone age between April 2005 and October 2006. Each child was examined by standard left hand radiograph and ultrasound examination of the left wrist. Sonographic examination was performed on the carpal bones to see its presence and to measure the transverse diameter. Bone age was evaluated by comparing the left hand radiograph with the standards of Greulich and Pyle atlas. Diameter of carpal bones measured by ultrasonography and radiograph was compared, the mean difference and agreement between 2 methods was calculated. Mean difference between bone age and chronological age, and interobserver difference were also calculated.

Results: Mean bone age and chronological age was 8.38 ± 3.45 years and 8.79 ± 2.73 years respectively. In all cases, the carpal bones which were seen on radiograph were detected by ultrasound. Cartilaginous ossification centers were detected by ultrasound but not demonstrated on radiograph in 3 subjects. Good correlation was found between ultrasound and radiograph (ICC of 0.907) in the measurement of carpal bones. High degree of agreement was found between 2 observers in the assessment of bone age (ICC of 0.988). Mean difference between chronological age and bone age was 0.40 ± 1.304 years and was not significant.

Conclusion: Sonographic examination was able to detect cartilaginous ossification center. Even though there was a good correlation between 2 methods, the diameter of carpal bone alone cannot be used to determine bone age. Ultrasonographic evaluation is more valuable if combine with radiograph.

STUDY ON THE EXTENT OF INDIVIDUALITY OF THE GAIT PATTERN OF MALAY SUBJECTS

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Introduction: Gait pattern is also known as walking pattern. Walking is an important attribute of man's superiority over the others in animal kingdom. A person can perform his or her walking pattern in a fairly repeatable and characteristic way, sufficiently unique that it is possible to recognize a person at a distance by their gait. Recognizing people by their gait is a biometric of increasing interest. Gait pattern or walking pattern is a series of consecutive foot /footwear prints found in the crime scenes. From the forensic point of view, one can relate gait pattern as unique to the individual. The most important factor is that gait pattern can help the investigator to reconstruct the crime scene as they provide useful investigation lead.

Methodology: Inked walking impressions were collected from 100 Malay subjects. Walking impressions were recorded without wearing shoes i.e. barefoot impressions. The subjects were asked to step with bare feet on an inked foot print plate and then to leave six steps with a normal walk on a spread mahjung paper and thus their gait pattern were recorded. They were properly numbered and preserved for analysis.

Results: Data obtained from various parameters viz. foot length, foot width, foot angle, step length, step width, gait length, gait angle, peculiarities observed in the foot/gait etc. were examined. The individuality is observed by measuring these variables.

Conclusion: In this research a detailed analysis of gait pattern with 100 subjects in Malay population has been made. This research revealed differences in the parameters in gait pattern of each individual and thus indicated the uniqueness of gait pattern. The gait pattern evidence should theoretically be available in most of the crime scenes like murder, robbery etc. This evidence can form an important link between crimes, criminals, crime scenes, and also victims. It is concluded that in the scene of crime investigation, the investigating officers can apply the technique of gait pattern analysis.

Keywords: Forensic science, gait pattern, gait measurements, identification, gait analysis.

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RESUSCITATION FROM SHOCK: THREE PATIENTS, THREE PARAMETERS, ONE GOAL

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Introduction: Shock is characterized by the lack of delivery of oxygen and nutrients to all the tissues and cells. This predisposes towards anaerobic metabolism, further aggravating the injury. The treatment in such condition means an increase in cardiac output (CO). This increase in CO can be achieved by increasing the circulating volume by means of fluid infusion or by supporting the myocardium through provision of inotropes and vasopressors. Fluid challenge to increase cardiac output relies on Starling's law which relates the force of contraction to the stretch of myocardium. Central venous pressure, pulmonary artery occlusion pressures have been recognized as and practiced as the indicator for fluid supplementation. Traditionally CO measurement requires placement of a Pulmonary artery catheter which is a major invasive procedure. Further the interpretation of generated data is also not easy and requires expertise. As a result arterial blood pressure especially mean arterial pressure serves as the surrogate. Monitoring of critically ill patients had undergone revolutionary change. Vigileo (Edward's life sciences) is one such monitor which relies on use of analysis of arterial pulse contour to give continuous CO along with stroke volume, stroke volume variation, and central venous oxygen saturation along with other derived parameters like systemic vascular variation. Each of these parameters has its own importance in the monitoring and management of critically ill patients especially those in shock.

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Case Reports: First case was a 48 yr old lady k/c of Type II Diabetes Mellitus, hypertension presented with type II respiratory failure and septic shock secondary to community acquired pneumonia. Vigileo monitoring revealed high SVR as a result along with low SV prompting institution of inotropes and withdrawal of vasopressors. Second case was a 54 year old male post operative for superior mesenteric artery thrombosis diagnosed on exploratory laparotomy having undergone resection of bowel from 3rd part of duodenum till mid transverse colon followed by EEA. The patient was in shock despite massive fluid resuscitation and high doses of inotropes and vasopressors. The Vigileo monitoring revealed a high SVV with resulting further fluid challenges, and alteration of inotropes.Third case was 64 year old male k/c of diabetes mellitus type II, hypertension, ischemic heart disease (last ejection fraction ~35%), and chronic renal failure. The patient presented in shock with changes on EKG and CXR and was managed on a working diagnosis of acute coronary syndrome, septic shock secondary to community acquired pneumonia. Vigileo monitoring revealed an adequate SV and SVV, prompting use of chronotropic doses of adrenaline infusion.

Conclusion: This presentation describes three specific case scenarios we had faced in our practice utilizing a different parameter in each case for the monitoring and management of each of three patients

GASTROINTESTINAL LYMPHOMA: A CLINICOPATHOLOGICAL STUDY OF 20 CASES IN HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM).

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Introduction: Gastro-intestinal lymphoma is not a common condition. The aim of this study is to evaluate the clinicopathological features of patients with gastrointestinal lymphoma diagnosed in Hospital Universiti Sains Malaysia (HUSM).

Methods: A retrospective analysis was conducted on 20 patients who was diagnosed with gastro-intestinal lymphoma in HUSM during the period of 1996-2006. The patients' records were reviewed to determine the clinical outcome of the patients. Patients were also contacted via telephone to establish their current status. The type of Lymphoma was classified based on the WHO classification. The staging used was according to Ann Arbor System for GIT Lymphoma.

Results: All cases were Non-Hodgkin Lymphoma. There were 8 males and 12 females. The mean age was 48.8 and the median age was 51. The pathological sites were 3(15%) in the stomach, 7(35%) in the small intestine (2 duodenum and 5 terminal ileum), and 12(50%) in the large intestine (8 caecum, 2 ascending and transverse colon and 1 rectosigmoid). The most common presenting symptoms were nausea, vomiting and epigastric pain for gastric lymphoma and abdominal pain with/without mass and diarrheoa for small and large bowel lymphoma. At presentation, one patient (5%) was in stage I, 3(15%) in stage II, 6(30%) in stage III and 5(25%) in stage IV. The majority, 17(85%) lesions were B cell lymphoma and the rest 3(15%) were T-Cell Lymphoma. Only 9(45%) patients underwent chemotherapy after surgical resection, 6(30%) underwent only surgical procedure without chemotherapy and 5(25%) had only chemotherapy. The average duration for follow-up was 28.2 months. 10(50%) patients died due to the illness (7 while undergoing treatment and 3 after 1-5 years of follow-up), 4 are alive and well and the status of 6 patients are unknown.

Conclusion: The HUSM experience on 20 cases of GI lymphoma showed that the patients present mainly with obstructive symptoms and underwent abdominal surgery. The majority is of B cell phenotype and the clinical outcome is not as impressive as primary nodal lymphoma.

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RESUSCITATION FROM SHOCK : EMERGING TARGETS AND GOALS OF TREATMENT

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Introduction: Shock is characterized by the lack of delivery of oxygen and nutrients to all the tissues and cells. This predisposes towards anaerobic metabolism, further aggravating the injury. The treatment in such condition means an increase in cardiac output (CO). This increase in CO can be achieved by increasing the circulating volume by means of fluid infusion or by supporting the myocardium through provision of inotropes and vasopressors. Fluid challenge to increase cardiac output relies on Starling's law which relates the force of contraction to the stretch of myocardium. Central venous pressure, pulmonary artery occlusion pressures have been recognized as and practiced as the indicator for fluid supplementation. However, this has not held true in most cases and of late it is advocated to use the dynamic markers (systolic pressure variation, stroke volume variation and pulse pressure variation etc) for this goal. Traditionally CO measurement requires placement of a Pulmonary artery catheter which is a major invasive procedure. Further the interpretation of generated data is also not easy and requires expertise. As a result arterial blood pressure especially mean arterial pressure serves as the surrogate.

Results & Conclusion: The presentation describes in details the newer concepts in monitoring of shock, including the development and establishment of new parameters and guide to therapy.

ACCURACY OF FLUID-ATTENUATED INVERSION RECOVERY (FLAIR) SEQUENCE OVER COMPLETE SEQUENCE OF MRI BRAIN IN DETECTING LESIONS IN PATIENTS WITH HEADACHE AND WITHOUT ANY NEUROLOGICAL DEFICIT

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Introduction: The objectives of this study were to determine accuracy of FLAIR sequence in detecting abnormalities in patients with headache and normal neurological examination and the associations between these abnormalities and other health problems.

Method: A cross-sectional study of 143 patients with headache and without any neurological deficit aged 13 years old and above were included. All patients underwent MRI examination of brain in Hospital University Sains Malaysia to investigate the causes for their headache. For each case, FLAIR series and complete series were reported separately at different times. Two radiologists were involved.

Results: Prevalence of intracranial abnormalities detected by FLAIR was between 13.3 – 27.3%. Sensitivity was 92.9% and specificity of 83.9%. Age more than 40 years, experiencing headache less than 24 weeks and hypertension were found to have association with abnormalities detected. The intracranial abnormalities detected by FLAIR were white matter lesions, meningioma, teratoma, meningoencephalitis and intracranial haemorrhages. On the other hand, FLAIR could not detect a small subependymal nodule and arachnoid cyst in cerebrospinal fluid (CSF) spaces and a small infratentorial lipoma.

Conclusion: FLAIR is sensitive enough in detecting intracranial abnormalities. However, cystic or fatty lesion in CSF spaces might be missed. FLAIR can be used as a screening sequence in patients with headache and normal neurological examination with much shorter period of time compared to normal brain sequences. This will effectively increased the number of patients examination per day in MRI suite.

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IDENTIFICATION OF LOW OR NO DIAGNOSTIC YIELD OF ULTRASOUND IN PATIENTS REFERRED FOR SUSPECTED GALLSTONE DISEASE IN DEPARTMENT OF RADIOLOGY, HUSM

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Introduction: Gallstone disease and its complication is a common medical and surgical problem with wide spectrum of presentation. Therefore many patients were referred to department of radiology for a definitive diagnosis.

Methodology: A cross sectional study conducted prospectively from May 2005 until April 2006. Referred patients which suspected gallstone disease would be interviewed based on a gallstone biliary 'check list' on the day of examination or interviewed by telephone within a month of ultrasound examination. The identification of a low or no diagnostic yield of ultrasound will be based on symptoms and scoring from a previous study.

Result: From 79 patients recruited in this study, 47 (59.5%) were negative for gallstone disease and 32 (40.1%) were positive. There were 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).There were no significant correlation between positive ultrasound findings with sex, age, number of parity, BMI, duration of symptoms and source of referrals (p more than 0.05). From 47patients (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 small sample size.

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

TOTAL THYROIDECTOMY VERSUS SUBTOTAL THYROIDECTOMY IN BENIGN THYROID DISEASE : HUSM EXPERIENCE

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Introduction: Goitre is one of the common surgical presentation in HUSM. In previous study by Naresh Burton, 30 % of patients who underwent thyroidectomy were diagnosed to have multinodular goiter. This study is carried out to determine outcome in term of recurrent laryngeal nerve injury, hypocalcaemia, and recurrence rate in patient who underwent subtotal and total thyroidectomy.

Methodology: This study reviewed patients with diagnosis of multinodular goiter treated in HUSM between January 1996 and December 2005. 111 patients were studied and 52 of them underwent subtotal thyroidectomy while 59 underwent total thyroidectomy.

Result: Post operative complications were studied in both groups. Permanent recurrent laryngeal nerve injury occurs in 2.4% (1 case) in subtotal thyroidectomy group compared to total thyroidectomy group which is 3.6% (2 cases). In total thyroidectomy group, 9.1% (5 cases) had permanent hypocalcaemia but none in the subtotal thyroidectomy group. In subtotal thyroidectomy group, 70.7% (29 cases) have functional remnant of thyroid tissue. Recurrence after subtotal thyroidectomy after 5 years is only 4.9% (2 cases).

Conclusion: In conclusion, the post operative outcome in patients who underwent subtotal thyroidectomy in HUSM between January 1996 to December 2005 were better than total thyroidectomy with significant functioning thyroid remnant.

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NULLIPARITY AS A RISK FACTOR FOR BREAST CANCER?

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Introduction: Many risk factors have been quoted in western literature for the development of breast cancer. Early menarche, late menopause, nulliparity, first child birth after the age of 30 years, women not breast feeding their child and consumption of oral contraceptives are a few hormone related risk factors responsible for the causation. We analyzed the data of breast cancer patients to study the risk factors involved.

Methodology: A retrospective analysis of 149 patients registered during a span of two years presented at our institute is done. A detailed record of their obstetrics history was analyzed on the basis of their menopausal status; age at marriage and at first childbirth, parity, hormonal contraception and breast-feeding and other associated risk factors.

Results: Data of 149 patients could be retrieved from 210 files. Median age at presentation in our study was 44 years. 78 premenopausal, 48 post menopausal, 23 perimenopausal females had breast cancer. There were 5/149 nulliparous females, 124/149 multiparous and 4/149 uniparous females. 132/149 patients had breast fed their children and 7/149 did not do so.Data for 10 patients were not available. All patients had menarche ranging from 13 to 15 years and their age at first child ranged from 16 to 26 years. 4/149 patients gave a history of consumption of oral contraceptives.

Conclusion: In spite of favorable obstetric history, when compared to western literature, our patients developed breast cancer.

GASTROINTESTINAL STROMAL TUMOUR (GIST) – A CLINICOPATHOLOGICAL ANALYSIS OF 14 CASES FROM 1997 TO 2006.

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Introduction: Gastrointestinal stromal tumour (GIST) is a rare but most common mesenchymal tumour of the gastrointestinal tract. The discovery of activating mutations of c-kit and the detection at the immunohistochemical level with CD117 has provided a very useful tool for the confirmation of the diagnosis of GISTs. The aim of this study is to evaluate the clinicopathological features of patients with GISTs diagnosed in Hospital Universiti Sains Malaysia (HUSM).

Methods: This is a retrospective study in which information obtained from 23 patients diagnosed as GIST from 1997 till 2006. The histopathology slides were reviewed and the case notes studied.

Results: Only 14 cases where the case records and the slides are complete, are included in the analysis. The mean age was 48 years, twelve of the patients were Malays and two were Chinese. The most common clinical presentation was abdominal pain, followed by upper gastrointestinal bleed, abdominal mass and altered bowel habit. The primary site of the tumour was stomach, followed by small intestine and large intestine. The tumor size varied from more than 10 cm to 5 cm -10 cm and 2 cm - 5 cm. The histopathological examination showed neuronal differentiation in 4 cases, muscle differentiation in two cases, both neuronal and muscle differentiation in two cases and none in six cases. Two of the patients who presented with peritonitis died after laparotomy and biopsy within 3 days. Another patient had advanced disease with nodules in the liver and died after laparotomy and biopsy 37 days from the date of admission. Three cases where complete resection was done are on follow up for 8 months to 8 years after histological diagnosis and are free of tumour. One case of gastric tumour resection with liver metastasis is on Imatinib drug and is still on follow up for two years. The remaining seven cases are lost to follow up.

Conclusion: The HUSM experience of 14 cases of GISTS showed that patients presented with acute abdominal symptoms within hours and also as a chronic diseases of more than one year. Seven cases with large tumours (more than 10 cm) had high grade lesion histologically.

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HEMORRHAGIC STROKE : THE ROLE OF C-REACTIVE PROTEIN (CRP)

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Introduction: C-reactive protein (CRP) is a cyclic pentamer composed of five non-covalently bound, identical 23.5 kDa subunits and plays an important role in innate immunity, as an early defense system against infections. Evidence suggests that CRP is associated with stroke. The purpose of this study was to examine the relationship between levels of CRP and hemorrhagic stroke.

Methodology: This study was performed on all patients admitted to Hospital Universiti Sains Malaysia with hemorrhagic stroke during a 2- year period from September 2004 to September 2006. Assessment and classification of hemorrhagic stroke patients were based on computed tomography (CT) findings as well as the grading by the World Federation of Neurological Surgeons (WFNS). The serum specimens were collected from 5 ml of patient's blood. Nycocard CRP single test which is a solid phase, sandwich-format, immunometric assay was used to determine serum CRP levels.

Results: At the time of CRP measurement, the average ages of the patients and control were 62 years (range 42 to 71) and 37.3 years (range 24 to 55), respectively. Patients (52 ± 45.99) had higher levels of CRP compared with controls (11.6 ± 8.40). Men were more likely to have higher CRP levels than women, which would indicate higher risk of hemorrhagic stroke for men.

Conclusion: Serum CRP level can be used as a clinical screen to identify an increased risk of cardiovascular disease and may be a good marker of cardiovascular risk in addition to serum lipid level.

VENIPUNCTURE VERSUS HEEL PRICK FOR BLOOD GLUCOSE MONITORING IN NEONATES

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Introduction: Recently it has been shown that venipuncture was less painful than heel prick for blood taking requiring minimally four drops of blood. The aim of this study was to determine whether there was a difference in the pain indicators and effectiveness between venipuncture and heel prick if only one drop of blood is required (e.g. blood glucose testing) in term neonates.

Methods: Sixty six term neonates undergoing blood glucose monitoring in the neonatal intensive care unit of Hospital Universiti Sains Malaysia during June and July 2006 were included in this study. The neonates underwent venipuncture (VP) or heel prick (HP). Primary outcome measures included were the Neonatal Facial Scoring System (NFCS) score, duration of the first cry, total duration of cry and duration of procedure. Secondary outcome measured was the number of skin puncture needed to obtain blood.

Results: The NFCS score was not significantly different between the two groups and the duration of the procedure was significantly longer for the VP than the HP group (median 27.5sec versus 7sec; $P < 0.001$). The differences between the two groups for duration of first cry, total duration of cry and number of skin punctures needed to obtain blood were not statistically significant but these parameters displayed a trend, favouring the heel prick.

Conclusions: Heel prick is still the preferred method of blood taking in neonates if only one drop of blood is required as in determination of blood glucose level.

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ATTITUDE OF BLOOD DONORS RESPONDING TO CALL OF TRANSFUSION MEDICINE UNIT AFTER POSITIVE SCREENING TEST.

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Introduction: Blood donation is a duty of every healthy member of the community and is a life saver. It is said that every donation helps in saving a life of at least one person or more than one. Every donated unit is tested for infectious diseases including hepatitis B, hepatitis C, HIV and VDRL. Most blood donors in the Transfusion Medicine Unit, University Sains Malaysia are called upon by letters and telephone calls in case of any positive screening test. However we have noticed over the years that many of these donors do not respond to the letters or even telephone calls. These cases are then referred to health department according to guidelines. Some studies have shown that there are donors who have practiced deferrable risk behaviors (e.g. sharing syringes, commercial sex-networking, or having paid sex or same gender sex). Furthermore, some studies have shown that donors used blood donations as a means of testing for their high risk behavior or HIV status. These male '*potential test seekers*' tended to be younger, single, unemployed and first-time donors.

Methods and Results: We have studied indirectly the attitude of 502 blood donors towards a letter/ call from Transfusion Medicine Unit, University Sains Malaysia. In a retrospective study we reported 502 cases of positive screening results (208 for Hepatitis C, 209 for Hepatitis B and 85 for VDRL) during January 2005 – December 2006. Out of 208 positive cases of hepatitis C only 140 (67.30%) responded to a letter/call sent to the address/phone number provided. Sixty one donor (29.33%) defaulted and did not respond at all. While 7 donors (3.37%) missed their subsequent follow-up. Similarly out of 209 positive donors for hepatitis B, 86 (41.47%) defaulted from the start while 2 (0.94%) missed their follow-up. In VDRL group 28 (32.95%) defaulted their blood bank attendance.

Conclusion: Poor attitude of blood donors can be a result of gaps between knowledge and importance of the screening tests carried out in blood donors. Other possible explanation is felony by the donors as such by hiding proper information at the time of counseling, by donating blood knowing that they are from high risk group and have high chances of carrying communicable diseases. There is a need to review the effectiveness of the present deferral system, which is based on the goodwill of the donor to disclose personal health risk factors. Increased knowledge of transmission of infectious diseases may encourage high-risk blood donors to self-defer. We recommend support program for blood donors who are positive for any positive test for infectious disease. The goals of this program should be to provide accurate, understandable information about the test results to donors, to encourage behavior that will reduce the likelihood of spreading infection and to provide adequate treatment.

A RELATIONSHIP OF VASCULAR PEDICLE WIDTH AND CENTRAL VENOUS PRESSURE IN VENTILATED PATIENTS

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Introduction: Chest radiograph is the most common diagnostic imaging technique in Intensive Care Unit, particularly important in assessment of patient's intravascular volume. However, this technique is underutilized and vascular pedicle width will be one of the solutions. The objective of this study is to determine relationship of Vascular Pedicle Width (VPW) and Central Venous Pressure (CVP).

Methodology: Prospective, randomized study on adult patients whom were ventilated in the Intensive Care Unit and Neuroscience Intensive Care Unit of Hospital Universiti Sains Malaysia between May 2006 until December 2006. One hundred and forty patients were chosen based on inclusion and exclusion criteria. CVP was measured within one hour after chest radiograph taken. VPW was measured on digitalized chest radiograph by Radiology Researcher at separate occasion without clinical data.

Results: Using Simple Linear Regression, there was a significant, positive and good correlation between CVP and VPW ($r = 0.51$, $p<0.001$). Using Multiple Linear Regression, there was a significant linear relationship between CVP and VPW ($p<0.001$, CI 0.48 – 0.97 mmHg), with those who had CVP of 10 mmHg will have VPW wider for 7.3mm. There was no interaction between independent variables and multicollinearity problem.

Conclusion: Central Venous Pressure and Vascular Pedicle Width can be used together in Intensive Care Unit. VPW is easy to interpret, practical, non invasive, and cost efficient. Measurement of VPW may help in management of fluid balance in critically ill patients. Therefore, measurement of VPW in ventilated patient can play a crucial role in Intensive Care Unit and act as added value for chest radiograph.

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RESULTS OF HEPATITIS B SEROCONVERSION IN REGULAR BLOOD DONORS AT THE TRANSFUSION MEDICINE UNIT – USM

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Introduction: Hepatitis B virus (HBV) is one of the major causes of transfusion transmitted hepatitis. Every blood donation is screened for hepatitis B virus in Transfusion Medicine Unit - USM. The blood donors are classified as first time donors and regular donors depending upon their donation frequency. The rate of seroconversion in regular blood donors is usually less as compared to first time donors due to their attitude towards healthy life style and their knowledge about the disease transmission. Our aims are to determine the frequency of seroconvert donors and to plan for a strategy in order to reduce this problem which holds a high risk causing transfusion-transmissible disease.

Materials and Methods: A retrospective study to look into the prevalence of HBV seroconversion was done in regular blood donors at the Unit of Transfusion Medicine, Hospital Universiti Sains Malaysia for the year 2006. In total 12,012 donors donated blood in 2006 out of them regular blood donors were identified who fulfill the criteria of inclusion for this study. Screening and confirmatory tests for HBV infection were done in Transfusion Medicine Unit and Microbiology laboratory respectively.

Results: Results of regular blood donors showed nineteen positive screening tests for hepatitis B. The confirmatory tests showed fourteen cases positive out of nineteen. One was confirmed to be negative and was returned back to the donors' pool. The remaining four did not turn up for the confirmatory tests and their status remains uncertain.

Conclusion: Prevalence of seroconvert donor for Hepatitis B is very high and thus it is an alarming situation to transfusionists. An urgent follow-up is indicated to look upon the sensitivity of the screening test and a proper donor counseling should be held. New strategies are needed to be identified in order to reduce the problem of seroconvert donors which can lead to an increase incidence of transfusion-transmissible diseases.

IDENTIFICATION OF FACTORS AFFECTING BLOOD PRESSURE CONTROL IN PATIENTS ADMITTED WITH HYPERTENSION IN PENANG GENERAL HOSPITAL

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Introduction: To evaluate blood pressure control in patients admitted with hypertension to medical wards in Penang General Hospital and to identify factors affecting blood pressure control on these patients.

Methodology: Study design: Prospective cohort study. Setting: Penang General Hospital, Malaysia. Patients: A total of 400 patients with a diagnosis of hypertension on admission. Patients with inclusion criteria were followed from their admission day until discharge. Data was collected by the researcher from the medical records. Information collected were blood pressure reading on admission, day 1 and discharge. Other information includes demographic data, social factors, medication name and number, co morbidities, target organ damage, cardiovascular risk factors. Descriptive analysis was done to determine the characteristic of patients and logistic regression was done to identify factors associated with blood pressure control.

Results: The seventh report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure was used to identify blood pressure as controlled (systolic < 140 mmHg and diastolic < 90 mmHg) or uncontrolled (systolic > 140 mmHg and diastolic > 90 mmHg) (1). On admission blood pressure was controlled in 24% and on discharge this percent increased to 54%. Beta – blockers and angiotensin converting enzyme inhibitors were the most used medication on admission and discharge.

Conclusion: Blood pressure was poorly controlled in patients admitted to Penang General Hospital. Malay race, female gender, patients with diabetes, patients with cerebrovascular disease and patients with chronic kidney disease were associated with poorly controlled blood pressure. Diuretics, statin therapy and ischemic heart disease were associated with good blood pressure control.

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A STUDY ON FIBRINOLYTIC MARKERS IN ACUTE STROKE PATIENTS IN HUSM

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Introduction: The fibrinolytic system plays an important role in preventing intra-vascular thrombosis. Previous researchers associate the stroke occurrence with the abnormality in fibrinolytic system. 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-1 (PAI-1) between acute stroke patients and stable non-stroke individuals and to investigate the clinical significance of these markers.

Methods: This study was conducted in HUSM for one-year period from March 2005 to February 2006. Stroke patients were selected from adult wards whereas control individuals were chosen from various clinics. One hundred and six individuals and 51 acute stroke patients were selected. Both groups have similar risk factors. Their blood were tested for the level of t-PA and PAI-1 using ELISA technique (Biopool TintElize) whereas plasminogen level was tested with colorimetric assay using Hemosil Tm. 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.
There were no significant statistical association between the three fibrinolytic markers and age, gender, 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.

Conclusion: High t-PA level indicates abnormal intravascular fibrinolysis which is probably an initiator of the cerebrovascular event or indicating of underlying endothelial damage. This finding supports the hypothesis that disturbances in fibrinolysis occur in stroke patients during cerebrovascular event. An association between high t-PA antigen level and stroke with a 4.6-fold odd ratio was found. t-PA antigen could be a marker to predict high-risk patients for stroke development.

INTRODUCING A NEW 4S MODEL FOR CLINICAL SKILLS LEARNING IN A SIMULATED SETTING WITH STANDARDIZED PATIENT IN SCHOOL OF MEDICAL SCIENCES, USM

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Introduction: Clinical skills' learning (CSL) is known to be associated with a number of problem and challenges. Clinical teaching is an educationally sound approach but often undermined by the problem of implementation resulting in ineffective outcome. However learning environment may not be teaching friendly for undergraduate training due to increasing number of students, fewer patients, haphazard cases for clinical learning skills, Costly clinical skills centre (CSC) is not sufficient to guarantee a competent skills training. Delivery of competent skill training is all that matters. A structured clinical skills training program is achievable with less costly skills learning model utilizing real, simulated or standardized patient and a well prepared protocol for skill learning. See one do one and new 4CID model are practiced with variable result. We propose an innovative method of learning in clinical skills named as 4S Model for CSL. This model aims at learning of clinical skills during undergraduate medical teaching. This can also be adopted for postgraduate training if required. To propose a model of competent clinical skills learning which is affordable, practical and interesting to ultimately achieve the outcome objective of our curriculum.

Methods: The model is based on 4S strategy complimenting clinical skills training associated with PBL (Phase II) and problem solving (Phase III). The four components of this model are $\mathbf{S_1}$) sequential approach to identify learners logistics of venue, clinical scenario and procedural skill, $\mathbf{S_2}$) stepladder methods of clinical skills learning, $\mathbf{S_3}$) self-directed learning of clinical skills competencies and finally $\mathbf{S_4}$) simulated/standardized patients case studies for developing clinical skills. This program will provide the student with an environment to practice the specific skills with opportunities of repetitions and formative feedback from multiple sources. SP used in this model will be deliberately practiced real life patient with minimal diversity and variability.

Result: A pilot model of 4S concept of learning has been achieved and will be shown with the help of a video demonstration in this presentation.

Conclusion: This model will offer and support a self-reliance and self-directed method of learning. Although a bit costly this model is going to be cost-effective, safe, reliable and reproducible to motivate the objective of producing competent doctors and inculcating the philosophy of continuing professional development among medical graduates.

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EXPERIENCING THE ROLE OF SURGERY IN ANAPLASTIC CARCINOMA OF THYROID GLAND IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Multinodular goiter (MNG) and differentiated thyroid cancer (DTC) are the commonly reported lesions in Kelantan Malaysia. Frequency of transformation of MNG and DTC into anaplastic carcinoma (ATC) is also not uncommon. Anaplastic carcinoma is shown to have a very poor prognosis and the average survival after the 1st diagnosis is 6-9 months. Surgical options usually confines to debulking and /or tracheostomy. Cause of death is either airway obstruction or distant metastasis. Palliative radiotherapy is the other choice of treatment available in this lesion. Typical clinical presentation, fine needle aspiration cytology and C.T. /MRI provide good guideline to diagnosis yet inconclusive in some cases. Ultimate HPE in some cases will only confirm the diagnosis. To establish the pattern of anaplastic lesions in thyroid and outcome of aggressive radical surgical management in anaplastic carcinoma.

Methodology: A partially perspective study of 11 cases of anaplastic carcinoma thyroid was carried out at Head and Neck setting of Hospital Universiti Sains Malaysia during the last 4 years. Earlier adopted protocol of conservative management and those managed by debulking and tracheostomy were compared with ones subjected to an aggressive surgical management of total thyroidectomy and radical neck dissection (RND)

Result: Out of a total 112 cases of thyroid masses, 26 were established as DTC and 11 as anaplastic carcinomas. Initial 2 case were managed conservatively with emergency intubation while remaining 9 were subjected to either debulking and tracheostomy (5 cases) or completion thyroidectomy with radical neck dissection (4 cases). All patients were closely followed and prognosis was compared with reported cases in literature. Ultimate HPE in many cases have shown to have anaplastic changes in MNG and papillary carcinoma in our series

Conclusion: Purpose of radical surgical management in indigenous lesions of ATC with an objective to observe any difference in prognosis and its effects on quality of life was achieved with a clear outcome. Extensive surgery though not the treatment of choice may be considered in early diagnosed cases. Total thyroidectomy with RND followed by radiotherapy is the surgical protocol in these cases.

ORTHOPAEDIC SURGERIES IN LUMUT MILITARY HOSPITAL

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Introduction: This military hospital encountered both military personnel and civilian seeking medical care. The objectives of this study were to determine the prevalence of orthopaedic surgeries performed in Lumut Military Hospital and the demographic data of the patients involved.

Methodology: This retrospective study reports the orthopaedic surgeries performed in Lumut Military Hospital over twelve month period, from December 2004 until November 2005. Demographic data were collected from surgical registry record and analyzed.

Results: There were 349 surgical procedures performed during the study period. Majority of the patients were male (82.8%). Most of the patients were military personnel (63%). The age ranged from 3 year old to 80 year old with the mean age is 35.3 years old. Sport injury is the predominant reason for surgical intervention.

Conclusion: The commonest orthopaedic procedure in Lumut Millitary Hospital was surgery related to sport injuries. To optimize the care of these patients, it will be necessary to provide the proper personnel, training, and equipment.

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FEMORAL FRACTURE IN YOUNG CHILDREN : THE USE OF PALVIK HARNESS

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Introduction: Managing femoral fractures in children before walking age can be challenging. Skin traction is associated with problems such as vascular compromise, skin abrasion and the need for longer hospitalization. We report outcomes of femoral fractures treated with Palvik Harness in children before their walking age

Methodology: All children who sustained a femoral fracture before their walking age from July 2005 till February 2007 were included in this series. The Palvik Harness were applied for 3-4 weeks to maintain the hip in flexion and abduction which is the comfortable position for the babies.

Result: All femoral fractures treated with Pavlik Harness united well with good alignment. No malrotation. The hospital stay was between 2 to 4 days.

Conclusion: Maintaining a proper alignment is not important in young children except malrotation as remodelling capacity is tremendous. Palvik Harness can provide adequate splintage in a comfortable position for the children, ease for parents to handle, short hospital stay and good clinical outcome.

SURGICAL MANAGEMENT OF NEGLECTED HUMERAL LATERAL CHONDYLE FRACTURE IN CHILDREN

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Introduction: Open reduction and fixation of neglected lateral humeral chondyle fracture is difficult due to muscle contracture and soft tissue interposition. Extensive soft tissue dissection has been associated with avascular necrosis. Thus, controversy exists as whether surgery can restore the anatomy of the elbow joint and improve the function. To find out the result open reduction, lengthening of common extensor origin and internal fixation

Methodology: This retrospective study reviewed the results of above surgical technique base on case records and radiographs.

Result: There were 6 cases of neglected lateral humeral chondyle fracture in children treated with open reduction, lengthening of common extensor origin and internal fixation. There were between age of 3 to 8 years old. The period of neglect were between 3 weeks to 18 months. Five patients were followed up period between 6 months to 36 months. All 5 patients had union by 2 months. Improvement of flexion-extension were between 30^0 -110^0 . Supination and pronation were not affected. There was no evidence of avascular necrosis of lateral chondyle however the were early lateral epiphyseal plate closure in all cases. Mean excessive carrying angle was 10^0

Conclusion: Open reduction and internal fixation of selected cases of neglected lateral humeral chondyle in children is a safe treatment option.

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

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Introduction: Diabetes Mellitus (DM) is a disease with debilitating complications. One of the common complications is neuropathy. Prevalence of neuropathy varied among authors depending on the test used and its prevalence approaches 50% in diabetic of more than 25 years. The purpose of this study is to determine proportion of DM type 2 patients with peripheral hand neuropathy attending diabetic clinic Hospital USM, Kubang Kerian, Kelantan and to determine the changes in the size (cross sectional area) of median nerve between DM patients with hand neuropathy and without hand neuropathy.

Methodology: This is a cross sectional study over period of 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. These patients were analyzed by modified Michigan Neuropathy Screening Instruments (MNSI) to diagnose neuropathy. 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.

Result: Proportion of subjects with neuropathy was 38.0%. Mean CSA area of median nerve in patients with diabetic hand neuropathy is 9.7mm^2 (2.12) and mean CSA of median nerve in subjects without hand neuropathy is 11.5mm^2 (2.33). The difference was statistically not significant with *p*-value of 0.056.

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

OCCURRENCE OF DRY EYE IN POST MENOPAUSAL WOMEN ON HORMONE REPLACEMENT THERAPY: FAKE OR FACT?

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Introduction: Lack of hormones in post menopausal women may contribute to dry eye. Hormone replacement therapy (HRT) therefore, is expected to prevent the occurrence of dry eye. However, this has never been scientifically proven. Our objective was to compare the occurrence of dry eye in post menopausal women between those taking hormone replacement therapy (HRT) and those not on HRT.

Methodology: A comparative cross sectional study was carried out to determine the occurrence of dry eye in control subjects and those on HRT in Hospital Universiti Sains Malaysia (HUSM). Schirmer test, tear film break up time (BUT) and rose Bengal staining were performed on all study participants.

Results: Fifty-four women were examined, 30 (55.6%) were on hormone replacement therapy (Group 2), while the control group consists of 24 (44.4%) women not on any hormone replacement therapy (Group 1). In Group 2 (HRT), 11 patients were on estrogen (Group 2A) and 19 patients were on combined estrogen and progesterone (Group 2B). Dry eye was found in 29.2% of patients in Group 1 (Control) and in 70.0% of patients in Group 2 (HRT) [p=0.003]. In Group 2 (HRT), dry eye was more common in Group 2B, 84.2% compared to Group 2A, 45.5% (p=0.042).

Conclusion: Dry eye was found more commonly in post menopausal women who were taking HRT. Our finding has negated the previous assumption that HRT is a protective factor against dry eye.

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CONTRIBUTING FACTORS FOR HIGH INTRAOCULAR PRESSURE (IOP) IN CORNEAL ULCERS

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Introduction: Secondary increased IOP in corneal ulcer is associated with many factors. The purpose of this study is to determine the factors influencing the rise in IOP in corneal ulcers.

Methodology: A total of thirty-one corneal ulcer patients were selected for this study. All patients underwent slit-lamp examination. The ulcers were graded into three stages; mild, moderate and severe based on the size, depth, infiltration, anterior chamber reaction and scleral involvement based on modified Ogawa's grading. Tono-Pen XL was used to measure the intraocular pressure. Patients were re-examined at day 7 and day 14 of admission. Patients with high IOP of 30 mmHg and above were treated with oral acetazolamide and were discontinued from IOP measurement at day 7 and day 14. Raised IOP was defined as a pressure of more than 21 mmHg in the affected eye, or a difference of more than 4 mmHg between the affected and the unaffected eye.

Results: Thirty-one patients with corneal ulcer who fulfilled the study criteria were studied. Their age ranged between 7 and 73 years old with mean of 44.45 ± 19.86. Twenty-four patients (77.4%) were male and 7 patients (22.6%) were female. Twelve patients (38.7%) had raised IOP while 19 patients (61.3%) did not have any rise in IOP. The results of the univariate analysis showed that the severity of ulcer, size, depth, infiltrate and involvement of the sclera were found to be significantly associated ($P < 0.05$) with raised IOP. However, all of these factors with the exception of scleral involvement did not remain significant ($P > 0.05$) after multiple logistic regression analysis. The association between anterior chamber reaction and raised IOP was not significant ($P > 0.05$). Ten out of 12 patients (83.3%) who developed raised IOP were started on oral acetazolamide 250 mg every six-hourly and were discontinued from further IOP measurement.

Conclusion: Scleral involvement in corneal ulcer was a significant risk factor for raised IOP. The severity of ulcer, size, depth and infiltration were just associated factors. There was no significant association between anterior chamber reaction and raised IOP.

OCULAR MYASTHENIA GRAVIS – AN ASIAN PERSPECTIVE

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Introduction: Ocular myasthenia gravis (MG) is a localized form of myasthenia in which only the extra-ocular muscles are clinically affected, namely the levator palpebrae superioris and orbicularis oculi. The purpose of the study is to describe the clinical presentation and course of ocular (MG) with particular emphasis on investigations leading to the diagnosis and the progression to generalised MG.

Methodology: This is a retrospective observational study. We reviewed the medical records of 42 patients with ocular MG who presented to the neuro-ophthalmology clinics at three main centres in Singapore; Tan Tock Seng Hospital, Singapore National Eye Centre and National Universiti Hospital from the year 2002 till 2003.

Results: There were 42 patients, 71.4% being males. The age-range was from 25 to 81 years. The peak is among 31-40 year-old and 61-70 year-old. Ptosis was the most common presenting symptom (66.7%) followed by diplopia (54.8%). Both ptosis and diplopia were presented in 21.4% of patients. Only 3 patients presented with generalised symptoms. Extraocular muscle examinations indicate mainly uniocular muscle involvement particularly superior oblique muscle 47.3% and followed by medial rectus muscle 31.0%. All eight patients who underwent edrophonium chloride (Tensilon) test had positive result. Both single fibre electromyography (SFEMG) and repetitive nerve stimulation (RNS) were performed in 25 patients. SFEMG was positive in 88% of patients but only 40% showed decremental effect on RNS. Anti-acetylcholine receptor antibody was abnormally increased in 4 out of 14 patients investigated. One of the patients who underwent thyroid function test was abnormal. Anti-skeletal muscle antibody was positive in 50% of the patients investigated. Enlargement of thymus gland was noted in 2 patients and both underwent thymectomy. Histopathology report showed hyperplastic changes without any malignancy. Of 42 patients, 13 were not on treatment as symptoms were mild. All remaining 29 patients were started on pyridostigmine, of whom eight required additional corticosteroid treatment. Almost all patients remained ocular MG except for one that became generalised MG. Three patients were having generalised disease on the day of presentation.

Conclusion: Ptosis remained the most common presenting symptom in ocular MG and followed by diplopia. Tensilon test and SFEMG are useful investigations to diagnosed ocular MG. In contrast to Caucasians, our series showed a lower conversion rate to generalised disease.

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

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Introduction: Childhood obesity is now a worldwide epidemic which is a great health challenge and difficult to control. Among the many aasociated health hazards is non-alcoholic fatty liver disease (NAFLD). It is a wide spectrum of liver disorders that progresses to liver failure or cirrhosis. This study was conducted to ascertain the local prevalence of NAFLD in childhood obesity as assessed by ultrasound (US) and liver enzyme levels, correlation between the two methods and to assess other factors affecting NAFLD.

Methodology: A total of 32 obese children were subjected to several anthropometric measurements, blood investigations and abdominal US using a 3.5 MegaHertz probe at Hospital USM from December 2004 to May 2006. The degree of fatty liver was analyzed using several sonographic criteria, namely liver-kidney echo discrepancy, posterior beam attenuation and portal vein wall clarity. Comparison between sonographically detected fatty liver, raised liver enzymes and correlations with other demographic figures were analyzed using appropriate statistical tests.

Results: Prevalence of fatty liver in obese children as assessed by ultrasound and liver enzymes were 65.6% and 37.5% respectively. Significant correlations were shown between sonographically detected NAFLD and liver enzyme levels ($p < 0.05$) and between degrees of fatty liver on US and hypertransaminases ($p < 0.001$). Body Mass Index (BMI) was the only other related factor affecting NAFLD by using US and raised Alanine Transaminase (ALT) ($p < 0.05$ for both).

Conclusion: The prevalence of NAFLD in obese children in HUSM (65.6%) is much higher when assessed by US than that assessed by liver enzyme levels (37.5%), indicating cases can be missed if using liver enzymes alone. Both methods showed significant correlation. The other related factor found significantly affecting NAFLD was BMI.

PATTERN OF RESUMPTION OF POSTPARTUM SEXUAL INTERCOURSE IN IBAN MOTHERS

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Introduction: Early resumption of post partum sexual intercourse (SI) affects the health of both post partum mothers and their newborn babies. Mothers need the post-partum period to recuperate from childbirth, and to breastfeed and bond with their babies. Early resumption of SI without contraceptive cover increases the risk of conception leading to close birth spacing. This paper describes the pattern of resumption of post partum SI and its determining factors among Iban mothers.

Methodology: A cross sectional survey was conducted among post-partum Iban mothers who brought their babies to access the childhood immunization services provided by the government health clinics in Sri Aman Division between July and August 2006. Mothers were interviewed using guided questionnaire on time of resumption of sexual intercourse, and questions on both individual and partners' associated factors that could influence early resumption of SI. These factors include socio-demographic and economic profile; post-partum care and living arrangement; type of delivery; awareness, belief and practice of post-partum taboo including sexual taboo; as well as contraceptive use and breast feeding practice.

Results: A total of 265 Iban mothers participated in this study. They were between the ages of 15 to 47 years, with a mean age of 29.0 ± 6.6 years. At the time of the interviews, they were 7 to 29 weeks post-delivery, with a mean post-delivery duration of 15.5 ± 5.9 weeks. Among these mothers, 192 (72.5%) had resumed intercourse at the time of interview. Women reported resuming SI as early as the 2nd week and as late of the 20th week after delivery. In fact, one mother who is at her 24th week post-delivery had not resumed SI. Mean period of SI resumption was 7.2.± 3.6 weeks and the mode was 8th week post delivery. The prevalence of early resumption of SI within the first 6 weeks post delivery was 37.4%. At the time of the study, 184 (69.4%) mothers were using one of the modern methods of contraception and 117 of the 184 (63.8%) mothers had started contraceptive use within the postpartum period. Among mothers who had started early contraception, 45.3% had resumed early S.I compared to 31.1% who had done so among those who did not start contraception within the postpartum period. There was significant association between early resumption of SI with mothers' income, husband's income, and family planning use within 6 weeks post delivery. Neither traditional sexual taboo, post-partum care arrangement nor mode of delivery were significantly associated with early resumption of SI during the postpartum period.

Conclusion: The prevalence of early resumption of post-partum SI was comparatively low among the Ibans compared to previous studies in other populations. Contrary to our belief, traditional taboo, post-partum care arrangement, and mode of delivery were not protective for early resumption of sexual intercourse. The higher use of family planning methods among mothers who had early resumption of SI is welcomed, but there were still mothers who reported early SI without any contraceptive protection. Health care providers should be aware of post-partum mothers' sexual practices and family planning needs to better serve their reproductive health need.

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THE IMPACT OF DENTURE WEARING ON THE ORAL HEALTH RELATED QUALITY OF LIFE OF EDENTULOUS ELDERLY IN KOTA BHARU, KELANTAN.

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Introduction: Oral health influence how people enjoy life: how they look, chew, speak, taste, and socialize. This study aims to determine the impact of denture wearing on the oral health related quality of life of edentulous elderly people.

Methodology: This cross-sectional study involved 283 randomly selected edentulous elderly in Badang, Kota Bharu, Kelantan. Consented participants were interviewed at their homes by a single interviewer using the Malay translated version of the Short Oral Health Impact Profile [S-OHIP (M)] which has been previously tested and validated for use in the Malaysian population. S-OHIP (M) is a 14-item scaled index of social impact. High impact scores indicate poorer oral health related Quality of life. Oral examination was carried out to record edentulous states and denture wearing.

Results: Ninety percent (90%) of denture wearers used both upper and lower full dentures. There were significantly more females (76.7%) wearing denture compared to males (p=0.007). Mean wear duration is 18.0 (SD=12.42) years. Overall, there was no significant difference in total S-OHIP(M) scores between wearing denture and non wearing denture. However, significant differences were observed in four items of the S-OHIP(M). Denture wearing gives lower impact score on chewing disability (OR 0.5: 95% CI, 0.3, 0.8), feeling shy (OR 0.3: 95% CI, 0.2, 0.7) and avoiding food (OR 0.2: 95% CI, 0.1, 0.4), reflecting a positive influence on the oral health related quality of life of the elderly.

Conclusion: Wearing both upper and lower full denture had significantly better oral health related quality of life in the aspect of ability to chew, feeling less shy and not avoiding foods compared to those who are not wearing dentures. Therefore attention must be given to ensure elderly are provided with good dentures to improve their quality of life.

Key words: Elderly, edentulous, denture wearers, oral health related quality of life

DENTAL AGE ESTIMATION IN MALAY CHILDREN BETWEEN 7-15 YEARS

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Introduction: Age estimation in humans plays an important role in forensic odontology and treatment planning in pediatric dentistry and orthodontics. Numerous methods of age estimation have been proposed over the years, the most commonly used method being that proposed by Demirjian, Goldstein, Tanner in 1973 in a French-Canadian population. The aim of our study was to evaluate the applicability of this method in a Malay population.

Methods: A cross-sectional study involving 428 children (214 males and 214 females) who were selected from schools of Kota Bharu using a stratified random sampling method. The orthopantomograph was used to score the 7 left mandibular teeth based on the criteria set by Demirjian et al. The calculated maturity score was used to obtain the dental age. The intra examiner variation was tested using Intra class correlation (ICC). Paired *t* test and Intra class correlation was used to compare the dental age and chronological age.

Results: The age range for boys was between 6.9 and 15.3 years and girls was between 6.8 to 15.2 years. The intra examiner variation was found to be 0.952. The dental age using Demirjian method significantly overestimated the age among both boys and girls ($P<0.001$). In average, the Demirjian method overestimated the age by 0.75 and 0.61 year among boys and girls respectively. The agreement (using ICC) revealed that 88% and 87% of variation of dental age using Demirjian method reflect the chronological age among boys and girls respectively.

Conclusion: There is significant discrepancy between dental age using Demirjian method and true age and therefore, modification on Demirjian method is indicated for application of dental age among Malaysian population

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PREVALENCE OF MALOCCLUSION AMONG 12 AND 16 YEARS OLD SCHOOL CHILDREN AT KOTA BHARU DISTRICT, KELANTAN

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Introduction: The aim of this study was to assess the prevalence and distribution of malocclusion based on incisal relationship and (D.H.C) of IOTN in a sample of (837) Kelantanese students aged 12 and 16 years old in Kota Bharu district, Kelantan.

Materials and Method: 837 school children were randomly selected from 13 secondary schools at Kota Bharu district, Kelantan. Students were undergone impression taking to get a casts for upper and lower arches. At laboratory, Incisal classification (British Standard Institute (1983)) was used to determine incisal relationship while dental health component (DHC) of (IOTN) was used to evaluate presence of different occlusal traits.

Results: The most prevalent incisal relationship was class I, followed by class II division 1, class III and class II division 2. Dental displacement was the most prevalent occlusal trait founded in more than (90%). Among the most prevalent occlusal traits were presence of pre-normal or post-normal occlusion , crossbite, presence of overbite, increased overjet. Males showed higher prevalence of class II whereas females showed higher prevalence of class III ($P<0.05$).

Conclusions: The prevalence of malocclusion was found to be similar to neighboring countries and near to international levels. Prevalence of some occlusal traits were higher than neighboring countries while it is still close to international levels. Further investigations are required to assure the prevalence of malocclusion among Kelantanese school children.

THE TERATOGENIC EFFECT OF STANDARDISED ANDROGRAPHIS PANICULATA EXTRACT IN SPRAGUE DAWLEY RATS

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Introduction: *Andrographis paniculata* is a popular herb in Asia and South East Asia. It is traditionally used for treatment of diabetes, hypertension and sore throat. We were interested to investigate the teratogenic effect of 50% ethanol extract of *Andrographis paniculata* (1.33% andrographolide) in Sprague Dawley rats.

Method: One hundred pregnant rats were randomly divided into 5 groups. The first group of animals was given vehicle (distilled water) and the second group was given an established teratogenic agent – valproic acid. The 3rd, 4th and 5th groups were given 50% *Andrographis paniculata* ethanol extract at 1, 10 and 100 mg/kg/day respectively from day 6 to day 15 of pregnancy. The dams were observed for any signs of toxicity. All animals were sacrificed on day 21 pc. Laparotomy and caesarean sections were performed to all animals. Fetuses were collected and individually examined for any congenital malformations.

Results: Observations on the dams did not show any abnormal findings in all groups of animals. There was an incremental rise in the percentage of post-implantation death with increasing dose of *Andrographis paniculata*. However, the post-implantation death was significantly increased and the fetal body weight was significantly reduced in animals that received valproic acid compared to other groups of animals. Examinations on the external features of fetuses revealed that the *Andrographis* extract was potentially teratogenic and toxic to the fetuses. One fetus from one litter appeared to have micrognathia and another fetus with rhinocephaly from a different litter was discovered following 10 mg/kg/day *Andrographis* treatment. Another fetus with micrognathia was observed in an animal that received 100 mg/kg/day extract. One fetus with exencephaly was found from group that received valproic acid therapy. The number of viable fetuses per litter, number of implantation sites per litter should be per litter and percentage of preimplantation loss per litter were not significantly different.

Conclusion: Based on the results, it was suggested that 50% ethanolic extract of *Andrographis paniculata* is potentially teratogenic in rats. Study in rabbit is highly recommended to evaluate the teratogenicity effect of this extract in nonrodent species.

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OSTEOSARCOMA MANAGEMENT – DEPARTMENT OF ONCOLOGY EXPERIENCE

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Introduction: Osteosarcoma (OS) is the commonest musculoskeletal malignancy in the 1st and 2nd decades of life. Early diagnosis of the disease and initiation of the treatment gives good results along with the limb preservation. Chemotherapy is the main stay of the treatment followed by the surgical procedure.

Material and Methods: Fifty- seven patients of Osteosarcoma attended the Oncology clinic from 2002 to 2005. All the patients were biopsy proven cases of OS. Patents were investigated following history taking and clinical examination. Investigation includes blood tests, radiological imaging and nuclear imaging. All the patients were considered for chemotherapy initially followed by limb salvage surgery by the OORU team. Following the surgery patients were reassessed for the necrosis factor depending on which the continuation of the chemotherapy decided.

Results: Eighty percent of the patients are in the 1st and second decade of life, with a male to female ration of 2:1. Approximately 78% are Malays followed by Chinese and Indians. EOI protocol is used as the chemotherapy protocol. Common site of the tumor is around the knee joint. About 20% of the patients had more than 90% of tumor necrosis. Patients who failed to respond to the 1st line chemotherapy were considered for the 2nd line chemotherapy with Ifosfomide. Patients tolerated the chemotherapy well. About 25% of the patients had complete response and approximately 20% had failed distally with no sign of local tumor recurrence. Follow up ranged from 6 months to 48 months.

Conclusion: OS is an aggressive tumor that needs an early detection and initiation of treatment. Detailed examination and thorough work up of the patient is needed prior to the treatment. Here we discuss the management of the patients of OS at our Department.

MOLECULAR EXPRESSION OF BREAST TUMOUR MARKERS IN THE MNU MODEL FOLLOWING BFGF AND PF4 INTERVENTION.

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Introduction: Angiogenesis plays an important role in breast cancer development. Rapid tumour growth is dependent on angiogenesis to support the metabolic need of the fast-growing transformed tumour cells and the growth of the tumour beyond a certain size requires angiogenesis. While many studies associating angiogenesis with tumour metastases and prognosis have been per hormed, little is done at the experimental level to correlate it with the breast carcinogenesis events. Estrogen receptor (ER), Progestrone receptor (PR), Epidermal Growth Factor Receptor (EGFR), cerbB2, laminin and E-cadherin are among the important markers involved in breast carcinogenesis i.e. initial and sustained growth, loss of cell-cell adhesions and increased cell-stromal interaction.

Methods: In this study, breast tumours were induced by injecting rats intraperitoneally with 1-methyl-1-nitrosurea (MNU) at a dose of 70 mg/kg body weight. The breast tumours were then subjected to angiogenesis promotion using basic Fibroblast Growth Factor (bFGF) or inhibition using Platelet Factor 4 (PF4). Quantitative Real-Time PCR analysis of ER, PR, EGFR, cerbB2, laminin and E-cadherin were performed on the rat's mammary tumour tissues.

Results: mRNA expressions of cerbB2, EGFR and Laminin increased as angiogenesis was being promoted as well as in angiogenesis-suppressed tumours. We observed increasing expressions of ER and PR and decreasing mRNA expressions of E-Cadherin as the tumour grew and this was not influenced by angiogenesis.

Conclusion: In conclusion, angiogenesis promotes growth and influence positive expression of epidermal growth factors to sustain the tumour. The tumour also shows less dependency on hormones as angiogenesis was being manipulated.

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TOXICITY OF CHEMOTHERAPY IN ELDERLY CANCER PATIENTS(>70 YEARS OLD).HUSM EXPERIENCE

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Introduction: The use of chemotherapy in elderly cancer patients (over 70 years old) is a subject of controversy regarding the toxicity and tolerability of treatment in this population due to age-related changes in pharmacokinetics.The aim of our study is an attempt to explore the toxicity profile of chemotherapy in elderly cancer patients with solid tumors.

Method: 40 patients (pts) with median age 78 (range 70-90) years, Male 26 (65%) Female 14 (35%).Malay 27 (67.5%) and Chinease 13 (35%), with performance status 1-2 and histologicaly proved cancer (lung,breast,colon,rectum,anal canal,nasopharyngeal, stomach, endometrium, lymphoma,non-hodgkin lymphoma,parotid,germ cell tumor, cholangiocarcinoma) received combination chemotherapy. The chemotherapeutic regimens included 5-fluoruracil plus leucovorin (13 pts), cyclophosphamide ,adriamycin vincristine (7 pts),cisplatinum alone (6 pts), cyclophosphamide,epirubicin,5-fluoruracil (3 pts), docetaxel (3 pts),vinoralbine (2 pts), gemcitabine (2 pts),cisplatinum,etoposide (1 pt),oxaliplatin,5-fluoruracil,leucovorin (1 pt),imatinib (1 pt),iressa (1 pt) in normal doses.

Results: All 40 patients were evaluated for toxicity.Toxicities were as follows:grade IV toxicities: leucopenia 1/40 (2.5%) pt, grade III toxicities:leucopenia 2/40 (5%) pts, anemia 2/40 (5%) pts, grade II toxicities: leucopenia 5/40 (12.5) pts,anemia 12/40 (30%) pts,grade I toxicities: leucopenia 2/40 (5%) pts,anemia 6/40 (15%) pts, thrombocytopenia 4/40 (10%) pts, peripheral neuropathy 2/40 (5%) pts.12 pts (30%) received granulocyte-macrophage colony stimulating factor prophylactically.No toxic death was reported.

Conclusion: Chemotherapy in elderly patients (over 70 years old) with different types of cancer is well tolerated and the toxicity profile is not different from the toxicity observed in younger cancer patients.Chronological age does not always predict the physiological decline in an individual. The hematological toxicity of most standard-dose chemotherapy is not affected by age in patients with normal organic functions and good performance status.

CLASSIFICATION OF CANCER CLASSES IN GENETIC MICROARRAY DATA BY USING MULTILAYER PERCEPTRONS AND WAVELET NEURAL NETWORK

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Introduction : Classification of patient samples is a crucial aspect of cancer diagnosis and treatment. A correct classification of patient samples enables specific therapies to pathogenetically distinct tumor types, which can maximize efficacy and minimize toxicity in cancer treatment.
Objective & Methodology: This paper presents a comparative study of the classification accuracy of human acute leukemia in two stages. The dataset of the human acute leukemia genes expression level were obtained from microarray technology. Recently, microarray technology has received tremendous interest from researchers as it enables monitoring of genes expression level of thousands of genes simultaneously on a single chip. Therefore, a clearer picture of interaction among thousands of genes can be obtained and it enhances the accuracy of the classification of the cancer samples. There are two stages in our implementation of classification of cancer samples by using neural network. In earlier stage, two different preprocessing methods are used in order to extract useful features from a huge number of gene expression level values of human acute leukemia from microarray. The raw data will undergo process of thresholding and filtering in first preprocessing method, whereas in the second preprocessing method, principal component analysis (PCA) is used as feature extractor. In the next stage of study, two different types of feed-forward neural network-multilayer perceptrons (MLP) and wavelet neural network (WNN) are applied. The preprocessed data in earlier stage were used as the input variables to neural network models, which aim to classify the human acute leukemia into two classes, which are acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL).
Results & Conclusion: Experimental result shows that highest accuracy of classification is obtained when principal component analysis (PCA) acts as the preprocessor and wavelet neural network (WNN) used as classifier.

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CO-MORBIDITY AND HABITS EFFECT ON SURVIVAL OF ORAL CANCER IN HUSM

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Introduction: Oral cancer is a preventable disease that can be linked to behaviors such as tobacco use, heavy use of alcohol, and betel quid chewing habit. These cancers can be prevented through lifestyle choices that reduce one's risk for the disease. Many of these patients also suffered from co-morbidities such as hypertension and diabetes, which lead to more disease burden.

Objectives: The aim of this study was to explore the co-morbidity and habits as well as their effect on survival among oral cancer patients in Hospital University Sains Malaysia (HUSM).

Methodology: A retrospective record review was conducted from August 2006 till December 2006 in HUSM. All patient's records diagnosed as oral cancer from 1986 to 2005 were reviewed. The required information was retrieved from patient's records and the data was transferred to a proforma. Data on follow-up period was obtained to determine patient's status and their survival time. All data extraction procedure was done by the main researcher.

Results: There were 133 oral cancer patients in HUSM from 1986 to 2005. Majority of the patients had no co-morbidity (61.6%). Hypertension (17.3%) was the main co-morbidity suffered by the patients, followed by cardiovascular disease (12.1%) and respiratory problems (9.8%). Most of the patients were smokers (60.5%), very few were with betel quid chewing habit (22.5%) and minority with alcohol drinking 4.5%). Overall 5-year survival was 16.1%. There were no significant different on survival of oral cancer patients with regard to co-morbidity (HR=0.81, 95%CI= 0.55, 1.19, p = 0.284) or habits (HR=1.09, 95%CI= 0.73, 1.65, p = 0.669).

Conclusions: Most of oral cancer patients didn't suffered from co-morbidity. Smoking were the most frequent habit among this patients. Co-morbidity and habit didn't effect the survival of oral cancer patients in HUSM.

Key word: Oral cancer, co-morbidity, habits, survival, HUSM.

THE PATHOLOGY OF OSTEOSARCOMA FOR THE LAST 12 YEARS AT HOSPITAL UNIVERSITI SAINS MALAYSIA

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Introduction: Osteosarcoma is the most common type of bone cancer in children and adolescents. The aim of this study is to review the pathology and clinical presentation of osteosarcoma seen at HUSM for the last twelve-years.

Methodology: The pathology and clinical records of all cases of osteosarcoma diagnosed at Hospital Universiti Sains Malaysia from 1996 – 2007 were reviewed.

Results: A diagnosis of osteosarcoma was made in 212 cases during this period. They were 178 (84%) Malays, 24 (11.3%) Chinese and 10 (4.7%) Indians. 129 (60.85%) cases were male and 83 (39.2%) female. On the basis of this data, the order of occurrence of osteosarcoma between various age groups can be established as: 10-12y > 1-10y > 20-30y > 30-40y > 40-50y > 50-60y > 60-70y. The duration of symptoms, ranges between 2-6 months. The common tumor site is femur (85 cases, 40%), tibia (55 cases, 25.9%), humerus (23 cases, 10.9%), fibula (9 cases, 4.3%), radius, (5 cases, 2.4%), iliac (5 cases, 2.4%), maxilla (3 cases, 1.4%), pelvis (3 cases, 1.4%), knee (4 cases, 1.9%), scapula (2 cases, 0.9%), shoulder (2 cases, 2.9%), rib (1 case, 0.5%), ankle (1 case, 0.5%) and calcanium (1 case, 0.5%). The histopathology is conventional (12, 5.7%), chondroblastic (13, 6.1%), fibrohistiocytic (10, 4.7%), sclerosing (9, 4.2%), osteoblastic (6, 2.8%), fibroblastic (5, 2.4%), telengiectatic (5, 2.4%), parosteal (2, 0.9%), small cell (2, 0.9%), giant cell (2, 0.9%), and periosteal (1, 0.45%).

Conclusion: Osteosarcoma occurs most commonly between 10-20 years in our populations. It is of male preponderance. The common site is femur. The most common histopathology is the conventional cell types.

Key words: Osteosarcoma; occurrence; review

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REVIEW OF 9 CASES OF EXTRA-NODAL NON HODGKIN'S LYMPHOMA ARISING FROM NASAL, ORBITAL, CENTRAL NERVOUS SYSTEM AND INTRAMUSCULAR REGIONS– HUSM EXPERIENCE.

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Abstract: Primary extra nodal non Hodgkin's lymphoma (NHL) represents about one third of the non-Hodgkin's lymphomas. Out of these, nasal, orbital, central nervous system (CNS) and intramuscular primary sites are considered less common. OBJECTIVE: We present 9 cases of extranodal NHL from these sites to have a review of clinical features, histopathology findings, clinical stage, treatment and prognosis as compared with literature. METHOD: 9 patients presented to our centre from August 2002 to March 2006 (median age was 50 years old with 5 males and 4 females) were analyzed .The primary sites are; nasal 2 patients, nasal and orbital 1 patient, orbital 2 patients, CNS 2 patients and intramuscular 2 patients. Treatment received; surgery followed by radiotherapy 1, chemotherapy alone 3, radiotherapy and chemotherapy 2 and radiotherapy alone 3. RESULT: 5 patients achieved complete remission where one of them now lost to follow up. 1 patient had a partial response following radiotherapy and chemotherapy then lost to follow up while 1 patient with CNS primary site immediately lost to follow up after radiotherapy. 2 patients however died at home following radiotherapy. Attempts to contact the 3 patients who were lost to follow up, showed 2 of them still alive and the other was untraceable (CNS primary site). Surviving patients follow up ranging from 12 to 43 months. CONCLUSION: Extra nodal NHL from these sites present with different clinical features compare with other lymphomas and diagnosis can be challenging in the beginning. Early intervention with radiotherapy and/or chemotherapy plays significant role in achieving remission. CNS site, elderly and poor performance status ended with poor prognosis.

PRE-TREATMENT CORRELATION OF CARCINOEMBRYONIC ANTIGEN (CEA) WITH COLORECTAL CANCER.HUSM EXPERIENCE.

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Introduction: Colorectal cancer is one of the commonest malignancies in the world. In year 2002 it was first and third most frequently reported cancer in male and female respectively in West Malaysia. Carcinoembryonic antigen (CEA) is an acid glycoprotein may elevate in certain malignancy specially large intestine (colon & rectum). CEA may also be raised in non-neoplastic conditions like inflammatory bowel disease and among smokiers. Normal range of CEA among non-smokers (less than 3 ng/ml) and among smokers less than 5 ng/ml. The purpose of this study is to analyse the correlation of CEA in diagnosed colorectal cancers at pre-treatment stage.

Method: This is a retrospective study of biopsy proven 46 colorectal cancer patients whose CEA level monitored at pre treatment stage, rest of the cases whose CEA value not available at pre treatment stage excluded from this study. Patients age, sex, race, site of tumor, mode of presentation, histology type & cancer staging reviewed.

Results: 46 patients (pts) with median age 52 (range 23-80) years, Male:Female 25:21 (pts) Malay:Chinease 37:9 (pts).26 (pts) diagnosed cancer of rectum,19 (pts) cancer of colon and 1 (pt) cancer of ceacum.17 (pts) presented with bleeding per rectal, 9 (pts) presented with altered bowel habit,8 (pts) presented with abdominal distention,5 (pts) presented with intestinal obstruction,5 (pts) presented with abdominal pain,2 (pts) presented with gross anemia. Histologically 36 (pts) moderately differentiated adenoca,8 (pts) well differentiated adenoca,1(pt) signet ring type adenoca,1(pt) mucinous ca.10 (pts) presented with Dukes B, 23 (pts) presented with Dukes C and 13 (pts) presented with Dukes D. 28 pts (60.8%) showed raised CEA (range 5.9 ng/ml-500ng/ml). Dukes B, C and D revealed raised CEA (50%), (60.8%) and (69.2%) respectively.

Conclusion: CEA is useful tumor marker which provides supportive evidence to diagnose colorectal cancers. Rising CEA correlates with progress and prognosis of disease.

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CHRONIC MYELOID LEUKAEMIA IN HUSM IN THE ERA OF TARGETED THERAPY

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Introduction: The Philadelphia chromosome, a genetic abnormality involving reciprocal transfer of *ABL* genes at chromosome 9q31-34 with *BCR* region at chromosome 22q has been recognized since the 1960's. The introduction of imatinib mesylate (Glivec) which inhibits the over expressed tyrosine kinase changed the management concepts and outcome in CML patients. We are interested to study the impact of Glivec on our cohort of CML patients.

Methodology: A single center cross sectional descriptive analysis of CML patients diagnosed in HUSM who had received Glivec therapy from 31st Dec 2002 to 1st Jan 2007 for at least 6 months. The objectives were to determine the cytogenetic and molecular expression, the cytogenetic response and the survival analysis of these patients. All living patients were censured on 1st Jan 2007.

Results: A cohort of 31 patients were analyzed. Median age at diagnosis was 39.5 [range 17 to 67] years. Only 19 patients had adequate metaphase spread for analysis at diagnosis where all (100%) had Philadelphia chromosome (Ph+). 4 (12.9%) failed to produce satisfactory metaphase spread and the remaining 8 (25.8%) failed to produced marrow fragments. All 28 (100%) patients analyzed showed presence of *BCR-ABL* transcripts. The remaining 3 patients were diagnosed prior to the availability of molecular service. 21 (67.7%) and 7 (22.5%) patients showed b3a2 and b2a2 transcripts respectively. At presentation, 25 (80.6%), 5 (16.1%) and 1 (3.2) were in chronic, accelerated phase and blast crisis correspondingly. From 19 patients with initial Ph+ chromosome only 11 (58%) are able to produce adequate repeat marrow specimen for analysis; 5 (26%), 1 (5.2%), 2 (10.4%) and 3 (15.7%) achieved complete, major, minimal and no cytogenetic responses respectively. Hence only 35% of all 31 patients had undergone cytogenetic response assessment. 25 patients were still alive and censured. The median survival was 14.2 years.

Conclusions: In our institution, assessment of therapeutic response using marrow cytogenetic is hindered by poor specimen yield. Hence an alternative response assessment such as quantitative PCR for *BCR-ABL* needs to be considered. This study also showed marked improvement in survival outcome compared to the referenced median survival with interferon or hydroxyurea quoted in literatures between 3 to 6 years.

ANTI-ATHEROGENIC AND ANTIOXIDANT POTENCY OF TINOSPORA CRISPA IN RABBITS FED WITH HIGH FAT DIET

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Introduction: High level of cholesterol is one risk factor for the development of cardiovascular diseases including atherosclerosis, myocardial infarction and heart attack. The influence of *Tinospora crispa* on atherosclerotic plaque formation was investigated in rabbits fed with high fat diet (HFD)

Methodology: The duration of this study was 10 weeks. Male New Zealand White rabbits were divided into 6 groups. Group NC and PC was used as a negative and positive (0.5% cholesterol) control. Group SC was given HFD with 5mg/kg simvastatin. Group 150CTC, 300CTC and 450CTC act as treatment groups receiving HFD with supplementation of 150, 300 and 450mg/kg of *T.crispa* extract respectively. Blood was collected from ear vein at weeks 0, 5 , 10 and the serum used for biochemical analysis. The aortas were excised and examined microscopically by H&E staining for foam cell-rich lesion assessment.

Results: Comparison within groups showed that PC, 300CTC and 450CTC have significantly increased ($p<0.05$) total cholesterol level from week 0 to 10. Meanwhile, in week 10, groups 150CTC, 300CTC and 450CTC showed significantly lower ($p<0.05$) LDL-C level at 74%, 59% and 49% respectively against PC group. In this study, all treatments groups showed significant increase ($p<0.05$) in HDL-cholesterol level through 10 weeks of experimental period. A significant increase ($p<0.05$) of total antioxidant status activity was observed in all treatment groups compared to the positive group. At week 10, group 450CTC has significantly higher ($p<0.05$) glutathione peroxidase and superoxide dismutase level compared to PC group. The atheromatous plaque formation in group given with HFD is significantly higher than treatment groups. In group 450CTC, which is the highest dose, as well as negative group and group given with simvastatin, no atheromatous plaque formation was found.

Conclusion: This study suggested that supplementation of *Tinospora crispa* extract would be able to reduce or retard the progression of atherosclerotic plaque development induced by dietary cholesterol. The enhanced serum HDL cholesterol and the increased antioxidant status may be the possible underlying the mechanisms antiatherogenic effect of Tinospora crispa.

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PHARMACOKINETIC STUDY ON INTERACTION BETWEEN CIPROFLOXACIN AND THEOPHYLLINE IN HEALTHY VOLUNTEERS

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Introduction: The aim of this work was to investigate the pharmacokinetic interaction between a multiple-dose regimen of oral ciprofloxacin and single dose of theophylline.

Methodology: A total of nine healthy male volunteers participated in a randomised, open labelled, single-dose, fasting and three way crossover design study at Penang General Hospital. The volunteers were randomly divided into three groups and received ciprofloxacin alone, theophylline alone and combination of ciprofloxacin and theophylline tablets in the first period of the study. Volunteers received the other treatments during the second and third period which was separated by a one-week washout period. Pretreatment with ciprofloxacin 500 mg every 12 hr for six doses was followed by a single dose of 250 mg theophylline, after which blood samples were collected for the determination of plasma theophylline and ciprofloxacin concentrations by HPLC methods validated earlier. Urine samples were also collected to determine the amount of theophylline and its metabolites. Mean pharmacokinetic parameters were compared using student paired t-test.

Results: Pretreatment with ciprofloxacin significantly increased the area under the plasma concentration-time curve from time 0 to infinity ($AUC0_{-\infty}$), the peak plasma concentration (C_{max}) and the half life of theophylline by 35.58% ($P < 0.001$), 15.23% ($P < 0.004$) and 16.25% ($P < 0.034$) respectively compared to the treatment of theophylline alone. Ciprofloxacin also markedly reduced the total oral clearance of theophylline by 27% ($P < 0.001$). In addition to ciprofloxacin effect on theophylline metabolism, our results showed that the renal clearances of theophylline metabolites formed; 1-methyluric acid, 3-methylxanthine and 1,3-dimethyluric acid were significantly decreased (54.13%, 53.18% and 34.98% respectively). This study revealed that ciprofloxacin significantly raised the $AUC_{0-\infty}$ and the plasma concentration of theophylline by inhibiting its CYP1A2 mediated oxidative metabolism in vivo.

Conclusion: Based on the findings of the present study, theophylline levels should be closely monitored when used concomitantly with ciprofloxacin. Theophylline dosage adjustment should be based on theophylline serum concentration.

FLATUSORB™: A UNIQUE FLATUS ODOUR FILTER FOR PATIENTS WITH EXCESSIVE ERUCTATION

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Introduction: Malodorous flatus is regarded by many as social embarrassment, but little has been done thus far to curb this problem. For patients suffering from gastrointestinal disorders such as irritable bowel syndrome (IBS), excessive flatulence coupled with offensive odour is definitely a major problem. The present study aims to generate an innovative external device to minimise the offensive odour of flatulence.

Methodology: Flatusorb™, a new odour-filter with self-adhesive feature is designed in the form of a flexible sandwich, having two outer layers of cotton felt and a middle layer of activated charcoal derived from local industrial coconut byproduct The repulsive odour is removed via adsorption by the activated charcoal through an optimized interplay between the volume and particle size of the charcoal powder. A differential sensory test was carried out among volunteers to assess the effectiveness of Flatusorb™ in reducing the odour released from four standard tubes. Each tube contained a predefined amount of offensive smelling substance to mimic the odour of flatus. The tubes were covered either with cotton cloth (A), double layer cotton felt (B), Flatusorb™ (C) or none (D; control).

Results: A total of 46 volunteers (mean age=22 years; male = 10, female = 36) participated in the sensory test. Majority (74%) did not detect the offensive odour from Flatusorb™-covered tube unlike the tubes uncovered or covered by other materials. Findings reflected the ability of Flatusorb™ to eradicate offensive odour. Usage trial by a volunteer for a period of 6 hours further confirmed the effectiveness of Flatusorb™ in reducing the odour of flatus, which could lead to the enhancement of personal confidence.

Conclusions: The present innovation could potentially increase self esteem and improve the public's quality of life, particularly those with frequent and/or severe flatulence. The usefulness of Flatusorb™ requires further challenges by a larger population of volunteers.

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THE PRACTICE OF COMPLEMENTARY INDIGENOUS MALAY THERAPIES IN PALLIATIVE CARE: A HEALTH-RELATED QUALITY OF LIFE COMPARISON

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Introduction: Complementary therapies continue to flourish in our multicultural society and were also reportedly common in palliative care. However, this phenomenon has not been thoroughly explored in Malaysia, particularly complementary indigenous Malay therapies (CIMT). Knowledge is also limited relating CIMT to health-related quality of life (HRQoL). The present study aims to firstly evaluate overall HRQoL profile, and secondly compare HRQoL levels between users and non-users of CIMT in terminal care.

Methodology: A prospective, cross-sectional study was conducted in 2 non-profit hospices in Selangor. The inclusion criteria consisted of adult patients (>18 years) capable of reading and/or writing in Malay/English. Upon written consents, the 17-item McGill Quality of Life Questionnaire (MQOL) was administered; assessing Global QoL, Physical Symptoms, Physical Well-Being, Psychological Well-Being, Existential Well-Being and Support Issues. Findings were analysed using SPSS 14. MQOL scores were presented as medians and compared via non-parametric test.

Results: Twenty-five outpatients and home patients were enrolled for the study (Hospis Malaysia = 19; Hospis Klang = 6). They were on average 56.2 years old (range= 33-76 years), suffering from various types of cancer. Majority were female (n=14), married (n=22), Malay (n=18) and retiree (n=9). Eleven were users of CIMT (44%). Overall, patients reported highest HRQoL for *Support Issues* (median=8.00) and worst for *Physical Symptoms* (median =4.00). Non-users of CIMT demonstrated significantly better scores ($p = 0.009$) for *Physical Symptoms* (median = 6.00) compared to users (median = 3.25). With the exception of *Physical Well-Being* domain, all domain scores were consistently higher among the non-users.

Conclusions: Outcomes suggested that CIMT was quite commonly-practised in this sample and it could be that poor physical condition had led them to seek complementary treatments (explaining the poorer HRQoL). Nonetheless, further studies in bigger samples are required to establish a more concrete causal relationship pertaining to this phenomenon.

PHARMACOKINETIC INTERACTION BETWEEN PROPRANOLOL AND EURYCOMA LONGIFOLIA EXTRACT

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Introduction: *Eurycoma longifolia Jack* is a well known herb with aphrodisiac properties. There is a possibility that this herb is consumed along with pharmaceutical drugs, however no report on interaction between modern drug and this herb have so far been reported.

Study objective: To assess the pharmacokinetic interaction between propranolol and *Eurycoma longifolia* extract.

Methodology: A randomized single blinded crossover study for single dose treatment was conducted in 18 healthy non-smoker young males. Eighty mg of propranonol (Inderal®) was orally administered with i) placebo (Lactose) and ii) 200 mg of *Eurycoma longifolia* water-based extract (0.0272±0.0026% eurycomanone) following an overnight fasting. A series of blood samples were collected at 0, 0.5, 1, 1.5, 2, 3, 4, 6, 8 and 10 hrs. The propranolol plasma concentrations were estimated using a previously validated HPLC method and further analysed using a WinNonlin pharmacokinetic program.

Results: There were significant differences in the bioavailability parameters i.e. ($AUC_{0-\infty}$, C_{max} and T_{max}) between test (propranolol with *Eurycoma longifolia*) and reference formulations (propranolol with placebo) ($p<0.005$, $p<0.002$ and $p=0.004$ respectively). The 90% confidence interval of the ratio of $AUC_{0-\infty}$ and C_{max} between the treatment phases were in the range of 0.52 - 0.78% and 0.44 - 0.64% respectively which are obviously away from the equivalence range of 80-125%.
The $AUC_{0-\infty}$ and C_{max} were decreased by almost 30% and 42% respectively in the test compared to the reference formulation. The powers of the study were 70% for $AUC_{0-\infty}$ and 80% for C_{max} parameters. The elimination half-life ($t_{1/2}$) of propranolol was not significantly varied ($p>0.1$).

Conclusion: The bioavailability of propranolol was decreased when it is concomitantly administered with *Eurycoma longifolia* extract. This decrease may result from the decrease in the quantity absorbed from the gastrointestinal tract since there is not enough evidence to indicate propranolol's induction of metabolism as seen in this study.

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THERAPEUTIC ROLE OF THEOBROMA CACAO *IN DEPRESSIVE DISORDERS MODEL ON MICE*

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Introduction: This study was conducted to investigate the therapeutic role of *Theobroma cacao* in depressive disorders model on mice. The parameters used were forced swimming test (FST) and tail suspension test (TST). *Theobroma cacao* is locally known as chocolate, cacao or cocoa.

Methodology: Fifty male mice were divided into 5 groups (n=5). Group 1 served as control group (vehicle treated), [N (F)] that exposed to FST and [N (T)] that exposed to TST. Group 2 was given antidepressant drug, Amitriptyline Hydrochloride (dose = 15mg/kg BW/day) that exposed to FST [Ax (F)] or TST [Ax (T)]. Group 3 treated with low concentration of *Theobroma cacao* extract (dose = 10 mg/kg BW/day) and exposed to FST [Tx1 (F)] or TST [Tx1 (T)]. Group 4 was treated with medium concentration of *Theobroma cacao* extract (dose = 30 mg/kg BW/day) and exposed to FST [Tx2 (F)] or TST [Tx2 (T)]. Group 5 was treated with high concentration of *Theobroma cacao* extract (dose = 100 mg/kg BW/day) and exposed to FST [Tx3 (F)] or TST [Tx3 (T)]. Anti-depressant drug and the three dosages of extract were fed for seven successive days by force-feeding.

Results: Analysis of variance showed that [Ax(F)] and [Tx3(F)] reduced immobility time significantly as compared to control [N(F)] in FST group. While in TST, [Ax(T)], [Tx1(T)] and [Tx3(T)] reduced the immobility time significantly compared from the control [N(T)].

Conclusion: These findings showed that *Theobroma cacao* intake was able to reduce immobility time in animal model of depression, similar to Amitriptyline Hydrochloride. Thus, *Theobroma cacao* may have potential therapeutic value for the management of depressive disorders.

EFFECT OF STROBILANTHES CRISPUS *JUICE ON WOUND HEALING IN HYPERGLYCEMIC INDUCED RATS.*

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Introduction: *Strobilanthes crispus* leaves were processed into juice. The aim of this study was to determine the effect of S.crispus juice (SCJ) on wound healing in normal and diabetic rats induced with streptozotocin.

Methodology: Wounds were created by performed 2 cm full-thickness incision on the back of each male Sprague-Dawley (130-290g) and the rate of healing was measured daily for seven days. Fourty five rats were divided into categories, which are normal, and diabetics. Normal category consists of 4 groups (n=5): control normal, treated with different doses of juice, 0.5, 0.75 and 1.0 mg/kg bw SCJ. Diabetes category consists of control diabetics, treated with different doses and a group was given glibenclamide. Rats were treated with SCJ by force-feeding besides giving basal diet (25 g/ day) and water *ad libitum*. Blood samples were taken on day 0 and 7 after wound creation for the determination of glucose and lipid profiles by using Chemical Autoanalyzer machine.

Results: The result showed that there was a significant difference ($p<0.05$) in increasing the percentage of wound healing in normal rats treated with 1.0 ml/kg bw SCJ compared to other groups. This showed that 1.0 mg/kg bw is the favorable treatment dose in increasing percentage of wound healing (65%) compared to normal group treated with o.5 mg/kg bw (46%), 0.75 mg/kg (41%) and control normal group (31%). The result showed that all diabetics group receiving SCJ had a significant difference ($p<0.05$) in increasing the percentage of wound healing. Group that treated with 1.0 ml/ kg bw showed the highest rate of healing (43%) compared to groups treated with 0.75 ml/kg bw (36%) and 0.5 ml/kg bw (29%). There was no significant decrease in plasma glucose and triglycerides in normal and diabetic rats after receiving the SCJ or not. There was a significant decreased in plasma total cholesterol and LDL-cholesterol in normal rats treated with 0.5 ml/kg bw SCJ. No significant increased in plasma HDL-cholesterol level in all diabetic and normal groups.

Conclusion: In conclusion, treatment of SCJ could increase the percentage of wound healing in rats. However it does not show significant effect in changing the blood glucose, triglycerides and HDL-cholesterol level for seven days duration.

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EFFECT OF DERMAL APPLICATION OF CHLORPYRIFOS ON HIPPOCAMPUS AND ISO-CORTEX OF ADULT MICE

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Introduction: Dermal absorption of Chlorpyrifos, an organophosphate insecticide is important because of its use in agriculture and against household pests. It has been reported to produce neurobehavioural changes and morphological damage in nervous system of animals during embryonic life. However, neurotoxic effect of Chlorpyrifos on adult animals has not been studied widely. The objective of this study is to investigate the biochemical and histomorphometric changes in the hippocampus and iso-cortex of adult mice following dermal application of chlorpyrifos in sub-toxic doses.

Methodology: Male Swiss albino mice (60 days) were segregated into one control and two treated groups (group n=10). Chlorpyrifos, diluted with xylene was applied in doses of 1/2 of LD_{50} (E1=100mg/Kg) and 1/5 of LD_{50} (E2=40mg/Kg) over the tail of mice of two treated groups under occlusive bandage 6 hours daily for 3 weeks. Blood samples, collected by intra-cardiac puncture were estimated for acetylcholinesterase (AChE) levels in all the animals using a spectrofluorometric method (Amplex Red reagent). Following intracardiac perfusion of 10% formal saline, the brains were removed and processed. Coronal serial sections were stained with 0.2% thionin in acetate buffer and pyramidal neurons of Cornu Ammonis of hippocampus and layer-V of iso-cortex were counted at 400X magnification using Image Pro Express software.

Results: At the end of 3 weeks, body weights were significantly reduced in E1 group compared to the control group. AChE concentrations were reduced by 97% in E1 group and 74% in E2 group. The neurons of CA-3, CA-1 in hippocampus and layer V cells of iso-cortex showed evidences of morphological damage in both treated groups. The neuronal count was significantly reduced in CA-3 layer of hippocampus in E1 group applied with 1/2 of LD_{50} dose.

Conclusion: Dermal exposure to chlorpyrifos produces damage to the neurons of hippocampus of adult mice in a dose-dependent manner.

SQUARE WAVE CATHODIC STRIPPING VOLTAMMETRIC DETERMINATION OF AFLATOXIN B1 (AFB1)

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Methodology : An electroanalytical method has been developed for the detection and determination of the 2,3,6a,9a-tetrahydro-4-methoxycyclo penta[c] furo[3',2':4,5] furo [2,3-*h*][l] benzopyran-1,11-dione (aflatoxin B1, AFB1) by a square wave cathodic stripping voltammetric (SWSV) technique on a hanging mercury drop electrode (HMDE) in aqueous solution with Britton-Robinson Buffer (BRB) at various pH as the supporting electrolyte. Effect of instrumental parameters such as accumulation potential (E_{acc}), accumulation time (t_{acc}), scan rate (v), square wave frequency, step potential and pulse amplitude were examined.

Results & Conclusion: The best condition were found to be E_{acc} of -0.8 V, t_{acc} of 100 s, v of 3750 mV/s, frequency of 125 Hz, voltage step of 30 mV and pulse amplitude of 50 mV. Calibration curve is linear in the range of 0.01 to 0.15 uM with a detection limit of 0.125×10^{-8} M. Relative standard deviation for a replicate measurements of AFB1 (n = 5) with a concentration of 0.01 uM was 0.83% with a peak potential of -1.30 V (against Ag/AgCl). The recovery values obtained in spiked ground nut elute sample were 94.00 +/- 0.67 % for 3.0 ppb, 91.22 +/- 1.56 % for 9 ppb and 92.56 +/- 2.00 % for 15.0 ppb of AFB1

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PHENOLIC COMPOUNDS AND ANTIOXIDANT ACTIVITY FROM HENNA LEAVES (LAWSONIA INERMIS)

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Restrictions on the use of synthetic antioxidants such as butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT) are being imposed because of their carcinogenicity. The present study is the continuation of a program aimed at investigation on antioxidant activity of extracts from medicinal and aromatic plants to identify alternative natural and safe sources of food antioxidant specially from plant origin. Henna (lawsonia inermis) is worldwide known as cosmetic agent, anti carcinogenic, anti inflammatory , analagesic , antipyretic. This study aimed to evaluate utilization of henna leaves extract as sources of natural antioxidants. Different solvents including methanol, ethanol, acetone, chloroform, hexane and water were used to prepare extracts of henna leaves. Attempts were also made to extract phenolic antioxidants of henna leaves using different solvents and by two different solvent extraction methods (solvent and ultrasound-assisted methods) with methanol and water. The effect of addition of henna leaves extracts on the stability of soybean oil was studied and the content total phenolic compounds in the extract was determined by spectrophotometric method according to the Folin-Ciocalteu and calculated as tannic acid equivalents. The plant material of the experiment (lawsonia inermis) was grown in kerman, Iran and collected in June 2004. Henna leaves extract as a natural antioxidant was evaluated during 16 days storage of refined soybean oil at 63 °C. Peroxide values (PV) and 2-thiobarbituric acid values were used as criteria to assess the antioxidant activity of henna leaves extract and were determined by official AOCS (1997) Cd 8-53, Cd19-90 respectively. Two solvent (water and methanol) were used to prepare extract of Henna leaves. Water extract in comparison with the methanolic one had been more efficient. BHA and BHT at 200ppm and methanolic extract at 800ppm and 1400ppm had equal TBA and PV value in soybean oil. Also the antioxidant activity of water and methanolic extracts was determined by using the rancimat method (90,120,150 °C) on refined soybean oil and compared with the induction period of synthetic antioxidants (BHA,BHT,TBHQ). The phenolic antioxidants of Henna leaves were extracted by two different solvent extraction methods (solvent and ultrasound-assisted method) with water and methanol. Sonication improved the total phenolic compounds of the extracts and shorter the extraction times.

INVOLVEMENT OF GLUTAMINE SYNTHETASE IN KAINIC ACID MEDIATED EXCITOTOXICITY IN RAT BRAIN

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Introduction: Glutamate is considered highly neurotoxic when accumulated in massive amounts in the extra cellular space in brain. Neuronal excitation involving the excitatory glutamate receptors is recognized as an important underlying mechanism in neurodegenerative disorders. In the central nervous system, the conversion of glutamate to glutamine that takes place within the astrocytes represents a key mechanism in the regulation of excitatory neurotransmission under normal conditions as well as in injured brain. It is reported that glutamine synthetase activity is decreased by nitric oxide (NO) in rat brain in ammonia toxicity. To understand the modulation of glutamine synthetase activity by NO in excitotoxicity, nitrate /nitrite (NOx) and glutamine synthetase were analyzed in cerebral cortex (CC), cerebellum (CB) and brain stem (BS) of rats subjected to excitotoxicity by kainic acid.

Methodology: Excitotoxicity was produced in adult male Sprague-Dawley rats by subcutaneous administration of kainic acid (15mg/kg body weight, dissolved in normal saline). Control rats received normal saline. The animals were sacrificed after 2 hours of injection and brain regions (CC, CB and BS) were separated and homogenized. In the homogenates, the NO was estimated as Nitrate/Nitrite and the activity of glutamine synthetase was assayed by colorimetric method. Statistical analysis of results was done by using independent student t-test.

Results: The concentration of NOx was increased ($p < 0.001$ in CC, CB and $p < 0.01$ in BS) and glutamine synthetase activity was decreased ($p<0.001$ in CC, CB & BS) in kainic acid mediated excitotoxicity.

Conclusions: The results of this study clearly demonstrated the increased formation of NO and suggest the involvement of NO in the pathophysiology of excitotoxicity. The decreased activity of glutamine synthetase indicates the modulation of its activity by NO. The decreased activity of glutamine synthetase may favor the prolonged availability of glutamic acid for excitotoxicity leading to neuronal damage.

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EFFECTS OF TUALANG HONEY ON POST MENOPAUSAL ANIMAL MODEL

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Introduction: Honey has long been used as traditional remedy for the treatment and prevention of peri and postmenopausal complications.

Objective: To evaluate the effect of Tualang honey on ovariectomised rats, a postmenopausal animal model.

Methodology: Thirty five (35) adult female Sprague Dawley rats were randomly divided into 5 groups. Animals of group 1 were subjected to shams operation. Animals of group 2, 3, 4 and 5 had undergone bilateral oophorectomy. Animals of group 1 and 2 were given vehicle treatment (15 mls distilled water/day) whereas those in Group 3, 4 and 5 received Tualang honey at low, medium and high dose (0.2, 1.0 and 2.0 g/kg/day) respectively by gavaging for 14 days. Body weight and food consumptions were monitored and daily vaginal smears were performed. The animals were sacrificed 24 hrs. after the last dose of treatment (during diestrous phase). Reproductive organs were removed, weighed and subjected for histological examinations. Plasma was collected for hormonal assays.

Results: The weight gained was less and the relative posterior tibia bones weight were higher in honey compared to ovariectomised vehicle-treated group. The estrous cycle was persistently in anestrous phase in the honey and vehicle-treated ovariectomised animals. The uterine and vaginal relative weights, the endometrial and uterine longitudinal muscle thicknesses and the free testosterone plasma level were significantly increased in animals that received low dose honey. The vaginal epithelium and vaginal epithelial-muscle thicknesses were significantly increased in honey compared to vehicle-treated ovariectomised groups. There was hyperplasia with vacuolation of some of the squamous cell of the vagina implying that there was an increase in mucopolysacharide content. No significant difference in 17-beta estradiol, progesterone and FSH plasma levels were noted in honey treated compared to control ovariectomised rats.

Conclusion: The research findings support the traditional used of honey. Our results showed that Tualang honey has significant effect on general health, bone weight and reproductive health in postmenopausal animal model; however the outcomes were dose dependent. Clinical evaluation on the effect of honey on peri and postmenopausal women were therefore highly recommended.

EFFECTS OF GARCINIA ATROVIRIDIS ON SERUM LIPID PROFILES AND THE HISTOLOGY OF AORTA IN ATHEROSCLEROTIC GUINEA PIG

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Introduction: The fruit extract of *Garcinia atroviridis*, with solvent methanol, was used to investigate its effect on serum lipid profile and the histology of aorta in guinea pigs induced with high cholesterol diet.

Methodology: Twenty four male Dunkin Hartley Guinea pigs were divided to 4 groups. The first group served as control and was given commercial rabbit chow. The second group was forced fed with 1ml *G. atroviridis* (50 mg/ body weight). The third group was fed with 1% cholesterol diet in food pellet only in order to induce atherosclerosis. The fourth group was given mix feeding (1% cholesterol diet plus G. atroviridis (50 mg/body weight). After two months of the diet treatment, blood and aorta were taken for biochemical analysis and histological studies.

Results: The supplementation of G. atroviridis to a high cholesterol diet decreased the serum levels of cholesterol by 26%, LDL 19% and 46% for LDL/ HDL compared to giving only high cholesterol diet. Histological studies showed significant reduction in fat deposition in the aorta of high cholesterol diet animals given *G. atroviridis* by 36 % compared to the high cholesterol diet group.

Conclusion: This study has shown that dietary intake of *G. atroviridis* had the tendency to decrease all lipid composition levels in the serum and it also reduced fat deposition in the aorta of high cholesterol diet animals.

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EFFECT OF MALAYSIAN HONEY ON THE MALE REPRODUCTIVE SYSTEM IN RATS.

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Introduction: Honey is frequently consumed by Malays for enhancement of fertility and vitality in man. Therefore, the aim of this study was to determine the effect of different doses of the Malaysian honey ("Tualang Honey") on male reproductive system in rats.

Methodology: Twenty eight Sprague-Dawley rats, aged 8 weeks (200-230g) were randomly divided into 4 groups (n=7 for each group). Rats were gavaged with 0.2, 1.2 or 2.4 g/kg body weight/day of honey for 28 days. Control group was given deionized water daily for the same duration. At the end of the study, the rats were sacrificed and blood was taken to determine the reproductive hormones. The reproductive organs were carefully removed and studied. All data were analysed using Kruskal-Wallis test followed by Mann-Whitney *U* test and '*p*' value of < 0.05 was considered significant.

Results: The rats treated with honey at 1.2 g/kg/day had significantly higher sperm counts compared to those in control group and in rats that received 0.2 and 2.4 g/kg/day of honey. However, there were no significant differences for sperm morphology, elongated spermatid counts as well as seminiferous tubule diameter and epithelial height among the groups. No significant differences were also found for the levels of reproductive hormones (gonadotrophins and testosterone) as well as the weights of reproductive organs (testis, epididymis, prostate and seminal vesicles).

Conclusion: This study suggest that honey given at the appropriate dose may enhance the third stage of spermatogenesis in rats which needs tu be studied further to elucidate its exact mechanism of action.

EFFECT OF STROBILANTHES CRISPUS LEAFY EXTRACTS IN LIPOLYSIS OF ADIPOSE TISSUE IN DIET INDUCED OBESE RATS.

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Introduction: The objective of this study was to investigate the effects of Jin Batu (Strobilanthes crispus) leaf extract in assisting weight loss of diet-induced obese rats fed a normal rat chow diet in vivo.

Methodology: Lean Sprague-Dawley rats (350-450g) were fed a high-fat diet containing 31.1% fat for 14 weeks to induce obesity. Obese rats were given S. crispus extract (1%w/w) in drinking water and standard rat chow diet for another 14 weeks. The assay for adipose tissue lipolysis effect was performed by measuring changes of adipose tissue weight, plasma leptin and glycerol level and lipoprotein lipase mRNA expression before and after treatment with S. crispus extract. The time course of body weight, food intake, organ weight (left and right inguinal, retroperitoneal and mesenteric adipose tissue, liver, heart and kidney), plasma parameters (triglyceride, total cholesterol, high-density lipoprotein, low-density lipoprotein and insulin), fasting blood glucose and fecal output of total fat were measured. Hepatic histological examinations were also performed.

Results: After 14 weeks, rats treated with S. crispus extract were found to have lower mean body weight, mean body weight gain and feed efficiency than control group. They also have significantly ($p<0.05$) lower adipose tissue and liver weight, and leptin level compared to control group. Lower glucose level and hepatic steatosis combined with high lipolysis rate and LPL mRNA expressed in adipose tissue was also noted in treated group.

Conclusion: These results demonstrated that adding 1% (w/w) S. crispus extract to a normal rat chow diet could ameliorate obesity and fatty liver in obese rats better than normal rat chow diet alone.

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EFFECTS OF EXOGENOUS LEPTIN ADMINISTRATION ON PUTUITARY-GONADAL AXIS, SPERM COUNT AND SPERM MORPHOLOGY IN PRE-PUBERTAL RATS.

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Introduction: Leptin is considered an important trigger for the initiation of sexual maturity in rodents. Exogenous leptin administration in adult rats has revealed significant adverse effects on sperm count and morphology. This study investigates the effects of leptin administration on some reproductive parameters in pre-pubertal male rats.

Methodology: Four week old male Sprague-Dawley rats were treated with either 0.1 ml normal saline (control group) or 10 µg/kg body weight of leptin daily for either 14, 28 or 56 days. At the end of each treatment, rats were anesthetized with ether and killed by cervical dislocation. Blood was collected from the inferior vena cava, following laparotomy, for serum FSH, LH, testosterone and leptin estimation using ELISA. Epididymis was removed, minced in 2 ml normal saline, filtered and stained with 1 % of eosin Y. Sperm count was performed on a Neubauer's chamber and corrected for dilution. Percent of abnormal sperms was calculated following examination of at least 200 sperms.

Result: Serum leptin concentration was significantly lower in leptin treated rats. Serum LH levels were significantly lower in rats treated with leptin for two weeks ($p<0.01$) but not in the other groups. No significant differences were evident in serum FSH and testosterone concentrations between leptin and saline treated controls. Compared to the controls, mean sperm count was lower in rats treated with leptin for two weeks but not in the other two groups, while the percentage of abnormal sperms was significantly higher in 8 and 12-week old rats ($p<0.001$). No sperms were detected in 6 week old rats

Conclusion: Pre-pubertal exogenous leptin administration increases sperm abnormalities in rats at puberty and early maturity and might decrease sperm count in some instances and it might be due to a direct effect of leptin on the testis.

HISTOPATHOLOGICAL STUDIES OF CARDIAC LESIONS AFTER AN ACUTE HIGH DOSE ADMINISTRATION OF METHAMPHETAMINE

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Introduction: Death due to heart failure has become common in acute intake of methamphetamine by increasing number of abusers. Thus, there is a need to review the effects on the heart by acute dosages of methamphetamine to correctly diagnose related deaths.

Methodology: Eighteen male Wistar rats aged six weeks were divided equally into test, placebo and control group. Test group were injected with 50mg/kg methamphetamine hydrochloride in normal saline, placebo group were injected with normal saline only, while control group not injected with anything. Five test group rats died within four hours of injection and their hearts collected on the same day. Another test group rat was sacrificed two days after injection. placebo and control group were sacrificed at similar intervals. Collected hearts were studied for cardiac lesions under light microscopy using special staining and immunohistochemistry.

Results: Microscopic examination of the myocardium of the rats that died on the first day of injection showed loss of nuclei in some myocytes, indicating cell deaths. Some areas in the sub-endocardium region showed internalization and enlargement of myocyte nuclei, consistent with regeneration of cells. There were very few foci of necrosis observed in these samples.
The heart sample from the single rat that survived injection for two days showed foci of infiltration of macrophage-like cells suspected to be regenerating myocytes. There were also spindle-like fibroblasts, macrophages and a few leucocytes found within these foci. The overall appearance of the myocardium does not indicate any inflammatory response, and the expected signs of necrosis were not observed.

Conclusion: These results suggest a need to re-evaluate the toxic and lethal dosages of methamphetamine for use in animals testing. Cause of death was suspected to be due to failure of other major organs from acute administration of methamphetamine. Death occurred within a time period where significant changes due to necrosis may not be evident in the myocardium. Further testing procedures are necessary to help detect deaths due to acute dosage of methamphetamine.

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STIMULATION OF HUMAN CHOLINE AND ETHANOLAMINE KINASES ACTIVITIES BY PROTEIN KINASE A AND C PHOSPHORYLATIONS

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Introduction: Choline kinase (CK) and ethanolamine kinase (EK) catalyze the first step in Kennedy's pathway for the synthesis of phosphatidylcholine and phosphatidylethanolamine, the major phospholipids in eukaryotic cell membrane. Increased CK activity in certain transformed cells and tumors has been reported and inhibition of CK has been suggested as a potential anticancer therapy. Similarly, EK has been shown to be important in carcinogenesis. The first objective of this study was to test if protein kinase A (PKA) and C (PKC) could phosphorylate multiple isoforms of human CK and EK *in vitro*. Subsequently, the effect of PKA and PKC phosphorylations on the enzyme activities and kinetic parameters were determined.

Methodology: Recombinantly produced and affinity purified human CKa2, CKb, EK1 and EK2a isoforms were subjected to *in vitro* PKA and PKC phosphorylations. Protein kinase phosphorylation was detected by Pro-Q® Diamond phosphoprotein gel stain (Molecular Probes) according to the manufacturer's protocol.The enzyme activities of phosphorylated and unphosphorylated (negative control) CK and EK isoforms were determined spectrophotometrically by pyruvate kinase-lactate dehydrogenase coupled assay. The K_m and V_{max} values for phosphorylated and unphosphorylated CK/EK were also determined with their natural substrates.

Results: Phosphoprotein gel staining showed that human CKb and EK2a isoforms were phosphorylated by PKA and PKC, respectively. Other isoforms tested were not phosphorylated by these two protein kinases under our experimental conditions. Under standard assay conditions, PKA phosphorylation of CKb stimulates its activity by 1.5 fold while PKC phosphorylation stimulates the activity of EK2a by 2.7 fold. Comparison of the kinetic parameters between phosphorylated and unphosphorylated CKb revealed that PKA increased its V_{max} (1.4 fold) but did not change its K_m.

Conclusions: This work has showed that PKA and PKC phosphorylated human CKb and EK2a isoforms, respectively. Phosphorylations of both isoforms resulted in stimulation of their enzyme activities. However, PKA phosphorylation of CKb did not affect the affinity of this enzyme towards its substrate.

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EFFECTS OF 50% ETHANOLIC EXTRACT OF ANDROGRAPHIS PANICULATA *(BURM. F.) NEES ON SERUM HORMONAL ASSAYS IN MALE RATS*

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Introduction: The use of *Andrographis paniculata* (AP) extract in diabetics is still controversial. AP has been claimed as an anti-diabetic agent and reported to show anti-fertility effects. Standardized 50% ethanolic extract (APE) preparation is undergoing research as an anti-diabetic herbal medication. However, the adverse effect of APE on serum hormonal assays in particular the level of testosterone is still unknown. To ensure safety of as a herbal anti-diabetic, serum hormonal assays was performed.

Objective: The purpose of the present study is to elucidate whether 50% ethanolic extract of AP impose any changes to serum hormonal assays of male of Sprague Dawley (SD) rats.

Methodology: The study involves adult male rats weighing 170-210g (8-10 week of age) administered with the extract of *Andrographis paniculata* (APE) at five doses that were 0.5, 1.0,10,100 and 1000 mg/kg. 10 male rats were used in each groups. The male rats were treated with APE for more than 77 days by oral gavaging and the control group received distilled water for the same duration. Blood was collected from each male rat for serum hormonal assays. ELISA test was used to assay the levels of follicle stimulating hormone (FSH), luteinizing hormone (LH) and testosterone (T)

Results: There were no significant differences observed with FSH and LH levels between treated and untreated male rats. However, APE 1, APE 10 and APE 1000 groups showed significantly higher testosterone levels when compared to the vehicle treated groups.

Conclusion: The increment of T level in APE treated groups is not in consonant with FSH and LH levels and showed a dose dependent behavior. These results taken together seems to refute with the statement that APE has anti-fertility effects. However, whether the increment in T levels in rats treated with APE do confer any advantageous effects remain debatable.

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NAT2 GENOTYPES AMONG MALAYS, CHINESE AND INDIANS

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Introduction: N-acetyltransferase 2 (NAT2) is a highly polymorphic enzyme involved in phase 2 metabolism. It is coded by the NAT2 gene. The wild-type NAT2*4 allele and NAT2*12 allelic variant are associated with fast enzyme activity (acetylation) while other allelic variants NAT2*5, NAT2*6 and NAT2*7 are associated with slow acetylation. These differences are crucial in determination of drug efficacy or toxicity. NAT2 is also associated with increased susceptibility of developing cancers when exposed to certain carcinogen or procarcinogen. Fast acetylators are at higher risk of developing colonic cancer while slow acetylators are at higer risk of developing bladder cancers. The aim of our study is to determine the frequency of NAT2 genotypes among Malays, Chinese and Indians.

Method: The study protocol was approved by the Research and Ethics Committee of Universiti Sains Malaysia. DNA from 212 Malays, 172 Chinese and 175 Indians blood donors were extracted using standard DNA extraction method. Nested allele specific PCR method was performed to determine the NAT2 genotypes. Genotype frequencies were calculated using Hardy-Weinberg Equation. The differences in the genotype were analysed using Chi Square Test.

Results: Chinese has the highest frequency for genotypes which predicts fast acetylation followed by Malays and Indians at 47.7%, 25.5%, and 11.5% respectively. Chinese also has the highest frequency of homozygous wild-type allele (NAT2*4/NAT2*4) followed by Malays and Indians with the frequencies of 47% 22.2% and 8% respectively ($p<0.01$). Indians has the highest frequency for the genotypes which predict slow acetylation at 47.7%, 30.1 and 15.1% respectively.

Conclusion: There are significant difference in NAT2 genotypes among Malays, Chinese and Indians. Since NAT2 is capable of metabolizing several carcinogens and drugs such as isoniazid and hydralazine, the ethnic differences in the polymorphisms of NAT2 genotype may influence ethnic susceptibility to certain cancers and side effects of certain drugs.