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BASIC MEDICAL SCIENCES: ORAL PRESENTATIONS

Aspirin Resistance: A Myth or Reality

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Abstract

Objectives: The study aims to identify pre-dose metabotypes (in serum) which may predict low dose aspirin resistance using ^{1}H nuclear magnetic resonans (NMR) pharmacometabonomic in Sprague Dawley rats.

Methods: Pre- and post-dose blood samples were obtained from Sprague Dawley rats placed on aspirin therapy. The blood samples were processed into sera and analysed using serum thromboxane B_2 ($STXB_2$) enzyme linked immunosorbent assay (ELISA) kit to classify the rats into either aspirin resistant or aspirin sensitive. Using $\geq 99\%$ inhibition of $STXB_2$ as the cut-off point for aspirin resistance, samples with $< 99\%$ inhibition of $STXB_2$ were classified as aspirin resistant while those with $\geq 99\%$ were classified as being sensitive to aspirin therapy. Further, pre-dose serum samples were analysed using NMR-based pharmacometabonomics approach. This involved NMR data acquisition using the Carr-Purcell-Meiboom-Gill (CPMG) sequence and processing the spectra. The data was statistically analysed with multivariate analysis using principal component analysis (PCA) and partial least squares-discriminant analysis (PLS-DA). Putative metabolites were then identified using the human metabolome database (HMDB) and other renowned databases.

Results: PCA score plots and Hotelling's T^2 plot were used to explore the data and exclude outliers. The PLS-DA score plots displayed clear discrimination between the aspirin resistant and aspirin sensitive groups. The predictive model had a goodness of fit value (R^2Y) of 0.989 and a goodness of prediction value (Q^2Y) of 0.183. The model had a sensitivity, specificity, and accuracy values of 100%. The model also had an AUROC curve of 1.

Conclusion: Pre-dose serum was used to successfully predict and discriminate aspirin sensitive from aspirin resistant rats using PLS-DA model. Lactate was identified as one of the metabolites that is predictive of aspirin resistance in coronary artery disease patients.

Keywords: aspirin, coronary artery disease, discriminant analysis, magnetic resonance spectroscopy, enzyme-linked immunosorbent assay

Modulation of Extracellular Matrix Gene Expression by Stingless Bee Honey in Human Dermal Fibroblast Cells

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Abstract

Objectives: This study aims to elucidate the potential roles of stingless bee honey on modulation of extracellular matrix gene expression in human dermal fibroblast cells.

Methods: Optimum dose and incubation time of stingless bee honey were determined using MTS assay. Pre-senescence and senescence human dermal fibroblast cells were treated with 0.02% of stingless bee honey for 72 h. After treatment with stingless bee honey, total RNA was extracted for gene expression analysis. Gene expression of matrix metalloproteinase 1 (MMP-1) and collagen type 1 (COL1A1) were analysed using real time RT-PCR technique.

Results: Incubation with 0.02% of stingless bee honey for 72 h significantly increased viability of fibroblast cells compared to untreated cells. Treatment with stingless bee honey significantly upregulated collagen type 1 expression in senescence human dermal fibroblast cells and downregulated matrix metalloproteinase 1 expression in both pre-senescence and senescence human dermal fibroblast cells.

Conclusion: In conclusion, this study suggested that stingless bee honey might delay cellular ageing in human dermal fibroblast cells through modulation of matrix metalloproteinase 1 and collagen type 1 gene expressions.

Keywords: bees, matrix metalloproteinase 1, honey, collagen type I, fibroblasts

Use of Artificial Intelligence to Create Prosthetics for Facial Defects: What are the Challenges and What to Expect?

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Abstract

Objectives: Cambridge dictionary describes artificial intelligence (AI) as computer technology, which carries out tasks just like human beings. This systematic review is aimed to discuss some of the various methods of successfully employing computer technologies in creating non-surgical facial prosthetics proposed by practitioners throughout the decades, and as it stands today.

Methods: A PICO (population, intervention, control and outcomes) model was constructed with a question 'Does computer aided design (CAD) assisted 3-dimensional (3D) printing increase the efficiency in manufacturing of maxillofacial prostheses for the rehabilitation of orofacial defects?' Forty articles were selected based on set inclusion and exclusion criteria by the authors consisting of studies and techniques involving CAD suitable for comparison.

Results: Data collection for fabrication of prosthesis consist of techniques like computed tomography (CT) and magnetic resonance imaging (MRI) with greater accuracy to the finished product than 3D scan and printing, which provide the most cost-effective solutions. CAD software can be paid subscription which provides maximum support or can be open source with limited functions. 3D printing can be done to produce the mold or prosthesis, each with their own set of advantages and disadvantages. The printers themselves can be affordable desktop ones or commercial counterparts. Although CAD offers increased efficiency overall, complete ocular prostheses fabrication still poses noteworthy challenges.

Conclusion: Depending on the process, CAD assisted 3D printed prosthesis can be more efficient and eliminates the need for specialists, but there are some prostheses, which, at the current stage of software development are better when constructed manually.

Keywords: three-dimensional printing, maxillofacial prosthesis, X-ray computed tomography, computer-aided design, artificial intelligence

Synergistic Cardioprotective Activity of Stingless Bee Propolis and Metformin Through Modulation of Anti-Oxidants in Diabetic Heart: The Relationship Between Anti-Oxidants and Oxidative Stress

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Abstract

Objectives: Cardiac oxidative stress and perturbation in antioxidative defense system are implicated in diabetic cardiomyopathy. Stingless bee propolis possesses anti-hyperglycemic and anti-oxidative property. This study investigated the possible cardioprotective effect of propolis in diabetic heart through modulation of anti-oxidative enzymes and lipid peroxidation.

Methods: Forty adult male Sprague-Dawley rats were randomised into five groups: i) normal control (NC); ii) diabetic group (DM); iii) diabetic given 300 mg/kg/day metformin (DM+M); iv) diabetic given 300 mg/kg/day propolis (DM+P) and v) diabetic given metformin and propolis (DM+M+P). Treatment was given orally for four weeks. Cardiac anti-oxidants such as superoxide dismutase (SOD), glutathione peroxidase-1 (GPX-1) and catalase (CAT) and lipid peroxidation malondialdehyde (MDA) were quantified using commercially available kits. SOD/GPX-1 and SOD/CAT as markers of oxidative stress from hydrogen peroxide accumulation were correlated with MDA. Data was presented as mean (SD) followed by one-way ANOVA with post-hoc Tukey test.

Results: SOD/GPX-1 is elevated in DM group ($P < 0.05$) but opposing trend is observed for SOD/CAT where DM group is significantly lower ($P < 0.05$) compared to NC. DM has higher lipid peroxidation MDA than NC. SOD/GPX-1 is positively correlated with MDA ($P < 0.05$). This study shows that SOD/GPX-1 can be a biomarker of oxidative stress in diabetic heart. Supplementation of propolis and metformin-propolis combination significantly reduced SOD/GPX-1 ($P < 0.05$ and $P < 0.01$, respectively) compared to DM group.

Conclusion: Supplementation of stingless bee propolis alone and metformin-propolis combination exert cardioprotective effect in diabetic heart by modulating cardiac anti-oxidative enzymes, leading to reduction of oxidative stress.

Keywords: *bees, anti-oxidants, metformin, propolis, Sprague-Dawley rats*

Effects of Ifenprodil on Spinal Microglia, BDNF and DREAM Proteins Expressions in Streptozotocin-Induced Painful Diabetic Neuropathy Rat Model

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Abstract

Objectives: To determine the effect of ifenprodil (NR2B subunit NMDA receptor inhibitor) on activated microglia, signaling brain-derived neurotrophic factor (BDNF) and downstream regulatory element antagonist modulator (DREAM) proteins expressions in the spinal cord of streptozotocin-induced painful diabetic neuropathy (PDN) rats.

Methods: Forty Sprague-Dawley male rats were randomly assigned into four groups ($n = 10$ for each groups): i) control; ii) PDN and iii) PDN groups treated with ifenprodil at lower dose (0.5 µg/day) or higher dose (1.0 µg/day). The rats were induced with type I diabetes by streptozotocin (60 mg/kg, i.p.) and allowed to develop into early phase of PDN for 14 days. The treatment (ifenprodil or saline) was given for seven days (day 15 to day 21) intrathecally and formalin test was conducted on day 22 before being sacrificed at 72 h post-formalin injection. Lumbar enlargement region of the spinal cord (L4–L5) was dissected out for immunohistochemistry and western blot analyses.

Results: There is a significant increase in formalin-induced flinching and licking behaviour with increased expression of activated microglia, BDNF and DREAM proteins in the spinal dorsal horn of PDN rats. Ifenprodil treated at both doses reduced the numbers of flinching and duration of licking in PDN rats. Ifenprodil also inhibited the spinal microglial activation and reduced BDNF and DREAM proteins expression in PDN rats.

Conclusion: Ifenprodil possibly alleviates hyperalgesia in PDN rats by suppressing the spinal activated microglia and BDNF and DREAM proteins.

Keywords: *Sprague-Dawley rats, diabetic neuropathies, ifenprodil, streptozocin, brain-derived neurotrophic factor*

The Biochemical Parameters of Asymptomatic Patients Infected with Human Immunodeficiency Virus (HIV) Administered Tualang Honey for Six Months

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Abstract

Objectives: To assess the biochemical parameters of asymptomatic HIV patients not on anti-retroviral therapy (ART) given Tualang honey for six months.

Methods: This is a randomised, controlled, open-labelled study. Tualang honey was administered for six months at three different doses: i) 20 g (Group A); ii) 40 g (Group B) and iii) 60 g (Group C) daily with a control

(Group D, no treatment given) in asymptomatic HIV-positive subjects with low CD4 counts of 250 cell/mL–600 cell/mL and not on ART. Biochemical parameters such as liver function test (LFT), renal function test (RFT), serum lipids and serum glucose were measured at baseline, 3 months and 6 months. Statistical analysis was performed using SPSS for Windows, version 22.0 (IBM Corporation, USA). Repeated measures ANOVA was applied to investigate the differences among all the parameters for all the four groups.

Results: Ninety-five subjects were recruited for the study. There were no significant changes noted in serum lipid (total cholesterol, LDL and HDL), LFT and RFT (*P*-value > 0.05 for all the parameters measured) among all the studied groups using repeated measures ANOVA within-group analysis, between group analysis and within-between group analysis. The serum glucose showed significant increment in Group C (*P* < 0.05), however the increment was still within normal serum glucose range.

Conclusion: At the dose and duration tested, Tualang honey supplementation did not cause any changes in the serum lipid profile, liver and renal function when given to asymptomatic patients infected with HIV. Administration of 60 g of Tualang honey daily may increase serum glucose level.

Keywords: *honey, HIV infections, glucose, human NOVA2 protein, CD4 lymphocyte count*

Effects of Gold Nanoparticles and Etanercept on the Expression of TNFR2 Expressing Regulatory T cells and CD103+ Dendritic Cells on Human PBMC in Asthmatic Individuals

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Abstract

Introduction: Immune tolerance by regulatory T cells (Tregs) is one of the various mechanisms employ by our lung to maintain homeostasis and protect the host against various environmental stimuli. Recently, a subset of Tregs expressing TNFR2 (TNFR2+ Tregs) is identified as a more suppressive and proliferative cell population and its regulation is reported to be impaired in respiratory dysfunction condition such as asthma. Gold nanoparticles (AuNPs), which have been proposed as a highly potential tool in immunotherapies, are shown to be protective against key features of asthma.

Objectives: Hence, current study would like to elucidate the effects of AuNPs on the expression of TNFR2+ Tregs, as well as on CD103+ dendritic cells (DCs), which have been shown to induce Tregs in asthmatic individuals. We also would like to investigate whether a TNFR2 agonist, etanercept, can correct the effects of AuNPs.

Methods: A five-colour flow cytometry assay was used to determine the expression of cell of interest in asthmatic and non-asthmatic controls (*n* = 2).

Results: Stimulation of peripheral blood mononuclear cells (PBMCs) of asthmatic individuals with AuNPs for 24 h shows upregulation of TNFR2+ Tregs and TNFR2+ effector T cells (Teff) as well as CD103+ DCs and etanercept are shown to neutralise the effects of AuNPs.

Conclusion: Results indicated the potential of AuNPs for immunotherapies due to its capability to induce a more suppressive Tregs and further support the role of TNFR2 in the development and phenotype of Tregs.

Keywords: *human TNFRSF1B protein, type II receptors, tumour necrosis factor, immunotherapy, dendritic cells*

Human Umbilical Cord-Derived Mesenchymal Stem Cells Promote Growth and Characterisation of Corneal Epithelial Cells

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Abstract

Objectives: Corneal conditions are a major cause of blindness globally. While whole cornea transplantation is an almost curative management of most corneal diseases, it carries a considerable risk, especially immune rejection. Ex vivo cultivated corneal stem cell transplantation is one of the most contemporary strategies for corneal epithelial regeneration. Further refining methods consisted of improving the cell quality, soluble factors and the substrate that form the tissue-engineered scaffold system. This study aims to evaluate the role of human umbilical cord mesenchymal stem cells (hUC-MSC) in the regenerative potential of human corneal epithelial cells.

Methods: Human telomerase-immortalised corneal epithelial cells (hTCEC) were co-cultured with hUC-MSCs and characterised, cellular migration assay and senescence markers were studied.

Results: Corneal characterisation markers *ΔNp63, ABCG2, ABCB5* and epithelial differentiation marker *K3* were upregulated in co-cultures, corneal cellular migration improved and UC-MSC significantly reduced senescence in hTCEC.

Conclusion: HUC-MSC may have maintained and improved corneal epithelial function through direct and indirect paracrine effects.

Keywords: mesenchymal stromal cells, coculture techniques, corneal diseases, epithelial cells, differentiation antigens

CLINICAL SCIENCES: ORAL PRESENTATIONS

Extensive Spread of Malignant Otitis Externa Mimicking Malignancy: A Case Series

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Abstract

Introduction: Malignant otitis externa (MOE) is an inflammation of the external auditory canal with preceding osteomyelitis of the temporal bone and the adjacent structures that could be potentially lethal. Malignant otitis externa may present with cranial nerve involvements with imaging's showing massive spread of disease mimicking nasopharyngeal carcinoma or any other malignancies.

Case Reports: Two elderly patients who presented with severe otalgia and significant lower cranial nerve palsies showing extensive spread of disease are reported in this case series. They both underwent long form of high-resolution computed tomography (HRCT) temporal that showed extensive disease spreading to skull base and intracranial mimicking nasopharyngeal carcinoma. Biopsies from the ear canal mass were negative for malignancy and the blood parameters were raised with inflammatory markers suggesting an infection going on. They both had resolution of disease after a prolonged course of antibiotics and surgical intervention for disease clearance in one of them.

Conclusion: It is important to differentiate MOE from malignancy as early intervention with a long-term course of high dose antibiotics may lead to complete resolution of disease although the cranial nerve functions might not be reverted to normal in some cases.

Keywords: ear canal, otitis externa, osteomyelitis, cranial nerve diseases, anti-bacterial agents

Detection of High-Frequency Hearing Loss Among Hospital Staff Exposed to Occupational Noise Using Extended High-Frequency Pure Tone Audiometry

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Abstract

Objectives: To determine the prevalence of high-frequency hearing loss, the association between noise exposure and extended high-frequency hearing loss and its associated factors among hospital staff working in noisy environment.

Methods: This was a comparative cross-sectional study involving 140 hospital staff (70 participants from noise-exposed group and 70 participants from non-noise exposed group). Hearing was tested using conventional and extended high-frequency (EHF) pure tone audiometry (PTA) up to 16 kHz. The prevalence of high-frequency hearing loss was calculated. The Chi-squared test was performed to determine the association between presence of noise exposure and conventional PTA and EHF PTA hearing loss, and the association between duration of noise exposure and EHF hearing loss. Multiple logistic regression analysis was performed to determine the factors associated with EHF hearing loss. *P*-value of less than 0.05 was judged to be statistically significant.

Results: The prevalence of abnormal conventional PTA in noise-exposed hospital staff was 22.9%, while the EHF hearing loss was 81.4%. Meanwhile, among the control group the abnormal conventional PTA was seen in 11 participants (15.7%), with 53 participants (75.7%) have EHF hearing loss.

We found that there was no significant association between noise exposure and EHF hearing loss. However, there was a significant association between duration of noise exposure and EHF hearing loss. Age was a significant factor for an exposed participants to EHF hearing loss, while gender, smoking and noise exposure were not.

Conclusion: The present study shows that EHF PTA gives no additional benefit compared with conventional PTA in detecting noise induced hearing loss. However, EHF PTA can be used as an adjunct to conventional PTA for early detection of hearing loss among noise-exposed workers.

Keywords: hearing loss, noise-induced, audiometry, pure-tone, cross-sectional studies

Diffusion Tensor Imaging Studies and Age-Related White Matter Changes Visual Rating Score of White Matter Integrity in Normal to Moderate Cardiovascular Risk Patients

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Abstract

Objectives: The general objective is to determine association between diffusion tensor imaging (DTI) parameters and age-related white matter changes (ARWMC) visual rating score of white matter integrity in the normal to moderate cardiovascular risk individuals. In specific, DTI values (fractional anisotropy [FA], mean diffusivity [MD], axial diffusivity [AD] and radial diffusivity [RD]) of cerebral white matter will be correlated with ARWMC score. The second specific objective is to identify the predictors of ARWMC score.

Methods: A total of 63 magnetic resonance imaging (MRI) brain images of subjects from Kelantan state who attended *Klinik Rawatan Keluarga* (KRK) were selected. Relevant clinical data of the subjects which fulfilled QRISK2 risk factors were obtained from patient's folder. MRI studies which include DTI sequence were retrieved from the picture archive and communication system (PACS). DTI values were obtained at the Osirix DTImap workstation version 4.1.2.

Correlation of DTI values with ARWMC using the Spearman correlation test done. Then the predictors of ARWMC were determined by the multiple linear regression test. Level of significance was determined ($P < 0.05$).

Results: FA frontal ($r = -0.36$; $P = 0.003$) and AD frontal ($r = -0.26$; $P = 0.040$) had substantial and negative correlation with ARWMC score. In addition to that, there were significant positive correlation shown between ARWMC score and RD frontal ($r = 0.30$; $P = 0.018$). There were positive significant association between ARWMC score and age (b [95% CI]: 0.106 (0.061, 0.151); $P < 0.001$). On the other hand, there were significant negative association between ARWMC score on RD insular (b [95% CI]: -0.007 (-0.013, -0.001); $P = 0.031$).

Conclusion: DTI is a powerful method for characterising changes in tissue microstructure associated with aging. It was found that the frontal lobe is the first region affected by aging. The myelin integrity is also affected first in the frontal lobe. Increasing age shown to increase ARWMC score.

Keywords: white matter, anisotropy, magnetic resonance imaging, cerebral cortex, cardiovascular diseases

Evaluation of Wells' Criteria and Associated Factors which Influence the Positivity of the Pulmonary Embolism in Computed Tomography Pulmonary Arteriography

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Abstract

Objectives: Computed tomography pulmonary arteriogahy (CTPA) is a gold standard method to detect filling defect in the pulmonary arteries to diagnose pulmonary embolism. However, the abuse of the service leads to the over usage of CTPA to screen for pulmonary embolism. Several criteria were used for prediction of the result, however not all clinicians are using the criteria appropriately. The purpose of this study is to identify the associated factors for pulmonary embolism which can assist the clinicians before requesting for the CTPA study.

Methods: A total of 338 CTPA studies from 2014 to 2017 in HRPZ II were studied and the demographic data, Wells' criteria and associated factors were evaluated to the outcome of the CTPA, either they are positive or negative. The included criteria are the age, gender, smoking status,

hypertension, pregnancy and Wells' criteria. The criteria then were analysed using simple logistic regression and multiple logistic regression. *P*-value of < 0.05 was taken as significant findings.

Results: Several associations were identified which contribute to the positive CTPA such as age, gender, smoking, BMI and Well's criteria with *P*-value of 0.002, < 0.01, < 0.01, 0.005 and < 0.01, respectively.

Conclusion: The association between the demographic data and clinical findings might help the clinician to anticipate the result of CTPA without overestimation of the clinical findings. This might reduce the unnecessary radiation to the patient and save the resource and reduce radiation and financial burden to patient due to unnecessary procedure.

Diffusion Tensor Imaging Study and Visual Rating Scale (Fazekas Score) of White Matter Integrity in Patients with Normal to Moderate Cardiovascular Risk Factors

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Abstract

Objectives: To correlate between the diffusion tensor imaging (DTI) parameters, i.e. fractional anisotropy (FA), mean diffusivity (MD), axial diffusivity (AD) and radial diffusivity (RD), and Fazekas score of white matter integrity in patients with normal to moderate cardiovascular risk factors, as well as to determine the predictors for Fazekas score.

Methods: A cross-sectional study of 63 patients with normal to moderate cardiovascular risk factors based on QRISK2 cardiovascular disease score who attended *Klinik Rawatan Keluarga* (KRK) department. All patients underwent MRI brain and DTI scanning and images were retrieved from the picture archive and communication system (PACS). Post-processing DTI parameters and analysis in frontal, temporal, parietal and occipital lobes were determined using OsiriX software. MRI brain images were

rated based on Fazekas score for white matter hyperintensity. These diffusion measurements were compared across the four different lobes, and significant differences were examined for correlations with Fazekas score.

Results: A total of 63 patients fulfilled the study criteria with a mean (SD) age 40 (11.45) year. Both low FA and high RD frontal lobe white matter showed fair correlation with Fazekas score ($r = -0.371$, $P = 0.003$ and $r = 0.319$, $P = 0.011$, respectively). There was a positive significant association between Fazekas score and age (b [95% CI]: 0.044 (0.025, 0.062); $P < 0.001$). An increase by one year in age resulted in the increase in Fazekas score by 0.044. Other factors including DTI parameters were not significantly associated with Fazekas score.

Conclusion: DTI could possibly serve a surrogate marker for the white matter microstructural changes in patients with normal to moderate cardiovascular risk factors.

Comparison of Eyeball Volumes Between Manual Segmentation, Semi-Automatic Segmentation and Spherical Volume Formula on MRI

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Abstract

Objectives: Determination of normal eyeball volume is important to estimate the orbital implant size and to diagnose eye diseases. The purpose of this study is to measure the eyeball volumes and time taken using the manual segmentation method (Gold standard) and compare with semi-automatic segmentation and spherical volume formula on MRI.

Methods: This was a retrospective cross sectional study. The selected T2-weighted MRI Brain images (axial view) were retrieved from picture archive and communication system (PACS) and sent to Osirix software. Closed polygon tool was used to manually segment the eyeball margin in every slice. For semiautomatic method, the widest diameter of eyeball was highlighted using grow region tool. In spherical volume formula, axial and transverse dimensions were obtained at mid-ocular slice. Time taken during the measurement were recorded. The comparison of mean eyeball volume and mean time taken between the three methods were analysed using One Way ANOVA.

Results: A total of 146 eyeballs of 73 MRI studies was selected. The mean eyeball volumes were 6.51 ± 0.61 cm³, 3.21 ± 0.78 cm³, 6.55 ± 0.83 cm³ by using manual segmentation, semi-automatic segmentation and spherical volume formula, respectively. There was a significant difference between manual segmentation and semi-automatic segmentation ($P < 0.05$). No significant difference between manual segmentation and spherical volume formula ($P = 0.98$). Time taken for eyeball measurement using manual segmentation, semi-automatic segmentation and spherical volume formula were 181.62 s, 61.44 s and 26.88 s, respectively and they were all statistically significant ($P < 0.05$)

Conclusion: Measurement of the eyeball volume using spherical formula method is comparable with that of the gold standard and it also takes the shortest duration of time. Thus, the spherical volume formula method is accurate as well as time effective to measure the eyeball volumes.

Keywords: eye, eye diseases, retrospective studies, magnetic resonance imaging, analysis of variance

Role of Apparent Diffusion Coefficient Value in Differentiating Low and High Grade Central Nervous System Tumours in Paediatric

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Abstract

Objectives: The apparent diffusion coefficient (ADC) value in magnetic resonance imaging (MRI) is related to the cellularity of central nervous system (CNS) tumours. Accuracy of ADC value to distinguish between low and high grade CNS tumours is controversial. The purpose of this study is to determine a cut-off ADC value with good accuracy to differentiate between low and high grade CNS tumours in paediatric patient.

Methods: A cross sectional study was conducted in 37 paediatric patients with CNS tumour who had MRI done from Jan 2014 to June 2018. Isotropic diffusion weighted images and ADC map were reconstructed with Horos Software Mac workstation. ADC values were calculated in the solid part of the CNS tumour by researcher. ADC values between low and high grade CNS tumours were analysed using independent *t*-test. Receiver operating characteristic (ROC) curve was used to determine the accuracy of ADC value with the selected cut-off value.

Results: Out of 37 paediatric patients with CNS tumours, 27 patients (73%) had low grade CNS tumours and 10 patients (27%) had high grade CNS tumours. Mean ADC value for low grade CNS tumour was 1.5×10^{-3} mm²/s and high grade CNS tumour was 0.75×10^{-3} mm²/s with *P*-value < 0.001. The sensitivity, specificity, positive predictive value and negative predictive value were 92.6%, 100%, 100% and 83.3%, respectively, using cut-off value 1.135×10^{-3} mm²/s.

Conclusion: ADC value is highly accurate (99%) to differentiate between low- and high-grade CNS tumours in paediatric patient.

Keywords: child, ROC curve, cross-sectional studies, diffusion magnetic resonance imaging, central nervous system neoplasms

A Study of Double Contour Sign in Relation to Uric Acid Level in Male Without Gouty Arthritis

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Abstract

Objectives: The double contour (DC) sign on ultrasound of the joint refers to monosodium urate crystal deposition within the joint in gouty arthritis. It is seen as echogenic curvilinear outlining the surface of articular hyaline cartilage on ultrasound. It is associated with hyperuricemia in gouty arthritis, but it also can be found in asymptomatic hyperuricemia. The study purpose is to evaluate the association of the DC sign with serum uric acid (SUA) level in the male patient without gouty arthritis.

Methods: A cross-sectional case control study was conducted in Hospital USM, Kelantan, Malaysia. The inclusion criteria were non-gouty arthritis male aged 18 years old and above. Subjects with SUA level above 4.8 mg/dL (288 μmol/L) were listed before simple random sampling done. Ultrasound of the first metatarsophalangeal joint was performed within 6 months after the SUA level was taken. About 10% of ultrasound were validated by a trained musculoskeletal radiologist.

Results: Of 58 subjects (mean age 48.14years), 26 subjects had hyperuricemia (SUA ≥ 7 mg/dL/420 μmol/L) and all of those had DC sign. Thirty-two subjects were normal SUA level. Of those, 19 (59.3%) had DC sign and another 13 (40.6%) had no DC sign. It was a statistically significant association. The mean SUA level in subjects with DC sign and without DC sign were 5.1 mg/dL (310.6 μmol/L) and 7.5 mg/dL (455.1 μmol/L), respectively. The optimum cut-

offs SUA level to detect double contour sign is 5.5 mg/dL (331.5 μmol/L) with sensitivity 95.6% and specificity 84.6%.

Conclusion: There was a high prevalence of DC sign in hyperuricemia which shows a significant association SUA level with DC. The higher incidence of DC sign is detected SUA level more than 5.5 mg/dL (331.5 μmol/L).

Role of Non-Contrast Computerised Tomography in Cerebral Venous Sinus Thrombosis–Significance of Hounsfield Unit and HU:Haematocrit Ratio

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Abstract

Objectives: Cerebral venous sinus thrombosis (CVST) is uncommon and may present with non-specific clinical manifestations. In suspected cases, first imaging modality commonly performed is non-contrast computerised tomography (NCCT) brain. The purpose of this study is to optimise NCCT brain as a screening tool in predicting CVST, specifically by measuring Hounsfield unit (HU) and HU to haematocrit (H:H) ratio.

Methods: Twenty NCCT brain of proven diagnosis of CVST by CT venography (CTV) and/or magnetic resonance venography (MRV) was selected. HU measurement was made at the site(s) of thrombosis. Sixty NCCT brains for control group were randomly selected from picture archive communication system (PACS). HU measurements were standardised at superior sagittal sinus and transverse sinus. H:H ratio was calculated for both groups. HU 70 and 62 as well as H:H ratio of 1.8 and 1.52 were used as cut off values based on previous works.

Results: Significant difference in mean HU between patient and control group; patient group had higher mean HU ($P < 0.001$). No significant difference in H:H ratio. In multiple logistic regression, a unit increase in HU increased the odds of having CVST by 18% ($P < 0.001$). HU 70 has poor sensitivity with a satisfactory specificity; HU 62 have satisfactory sensitivity and specificity. H:H ratio of 1.80 has poor sensitivity with a satisfactory specificity; H:H ratio of 1.52 has intermediate sensitivity and specificity.

Conclusion: HU measurement can be a reliable indicator in predicting CVST. Calculating H:H ratio has otherwise shown to be of no significant benefit in diagnosing CVST in our setting.

Keywords: hematocrit, cranial sinuses, magnetic resonance spectroscopy, intracranial sinus thrombosis, X-Ray computed tomography

Development and Validation of Questionnaire for Assessment of Knowledge, Attitude and Practice of Ergonomic in Dentistry Among Clinical Years Dental Students (ErgoDent)

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Abstract

Objectives: Work-related musculoskeletal disorder is common among dental personnel worldwide. It is caused by poor application of ergonomic principles into dental practice. It is important to tackle the problem earlier, starting from their study period. Thus, a tool is needed in order to assess their knowledge regarding ergonomic practice, attitude towards ergonomic practice and practice of ergonomic in dentistry. This study aimed to develop a new questionnaire to assess the three said components among dental students in clinical years.

Methods: Information were gathered, and three steps were applied where the domains were identified, items were generated, and responses were selected. Content validation and face validation were followed after its construction.

Results: The newly developed ErgoDent Questionnaire showed item-level content validity index (I-CVI) of 1.00 and item-level face validity index (I-FVI) of 1.00 was also obtained from 10 respondents, showing that the items were clear, understandable and comprehensible.

Conclusion: This study showed good level of I-CVI and I-FVI for the newly developed questionnaire. This tool is considered valid and to be used for assessment of knowledge of ergonomic practice, attitude towards ergonomic practice and practice of ergonomic in dentistry. However, further validation needed in order to verify its psychometric credentials in other settings. It also can be applied to subjects other than dental students (dental personnel or professional) with minimal modifications.

Effects of Cultural-Based Psychoeducation Programme on Caregivers of Patients with Schizophrenia in Hospital Universiti Sains Malaysia: A Pre- and Post-Intervention Study

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Abstract

Objectives: Being closely affiliated to a stigmatised individual, caregivers of patients with schizophrenia are prone to develop affiliate stigma. Perceptions of stigma were negatively associated with caregiver health, sense of mastery, and social support. The aim of this study is to assess the effect of cultural-based psychoeducation programme on affiliate stigma level and quality of life among caregivers of patients with schizophrenia.

Methods: This was a pre- and post-intervention study without control, conducted at MENTARI (Community Mental Health Centre) Hospital Universiti Sains Malaysia, Kelantan from July 2018 to October 2018. Study sample (28 participants) was selected through systemic sampling method from caregivers of patient with schizophrenia who attended follow-up in psychiatry clinic Hospital Universiti Sains Malaysia. Participants attended six sessions of psychoeducation programme over three months duration. Caregivers' affiliate stigma was assessed using Malay version affiliate stigma scale, while caregivers' quality of life was assessed using Malay version WHO Quality of Life questionnaire (WHOQOL-BREF).

Results: There was a statistically significant reduction (P-value < 0.05) in the mean affiliate stigma score of caregivers from 48.17 (pre-test) to 43.17 (post-test) following the cultural-based psychoeducation programme. Assessment of caregivers' quality of life noted improvements in all four domains (physical, psychological, social and environment), however only psychological domain showed statistically significant improvement (P-value < 0.05).

Conclusion: Cultural-based psychoeducation programme is effective in reducing the affiliate stigma and improve the quality of life in psychological domain among the caregivers of patients with schizophrenia.

Keywords: caregivers, quality of life, schizophrenia, social stigma, surveys and questionnaires

Effects of Various Factors on Maxillary Arch Dimensions in Unilateral Cleft Lip and Palate Children: A Multi-population Study

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Abstract

Objectives: To evaluate the effects of different techniques of cheiloplasty and palatoplasty and, types and side of unilateral cleft lip and palate (UCLP) in treatment outcome based on maxillary arch dimensions using laser scanned 3D model (LS3DM) in three populations (Malaysian, Bangladeshi and Pakistani).

Methods: Two-hundred and fifty-five (85 for each population) maxillary dental casts were taken before any orthodontic treatment and bone grafting at 5 to 12 years of age. All the dental casts were scanned and converted into LS3DM by Next Engine laser scanner and 765 linear variables [Inter-canine width (ICW), inter-molar width (IMW) and arch depth (AD)] were measured using Mimics software. Multiple linear regression analyses were used to evaluate the association between different techniques of cheiloplasty, palatoplasty and UCLP types, sides and maxillary arch dimensions (ICW, IMW and AD) of three populations. The significance level was set at $P < 0.05$.

Results: Significant association was found between two techniques of cheiloplasty ($P = 0.001$) and palatoplasty ($P = 0.046$) with ICW in Malaysian population. Significant association was found between two techniques of cheiloplasty ($P = 0.029$) with ICW and UCLP type ($P = 0.016$) with AD in Bangladeshi population. However, Pakistani population did not showed any significant association.

Conclusion: Modified Millard technique of cheiloplasty and Bardach technique of palatoplasty had more unfavourable effects on the ICW in Malaysian UCLP children. Bardach technique of palatoplasty and complete type of UCLP had more unfavourable effects on the ICW and AD respectively in Bangladeshi UCLP children.

Psychosocial Function Among Patients with Schizophrenia: A Cross-Sectional Comparison of Psychosocial Rehabilitation Attendees and Non-Attendees in Kelantan

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Abstract

Objectives: Psychosocial rehabilitation is important for recovery of patients with schizophrenia. Thus, this study was aimed to compare the psychosocial function of psychosocial rehabilitation attendees and non-attendees among patients with schizophrenia in Kelantan.

Methods: This was a comparative cross-sectional study between psychosocial rehabilitation attendees and non-attendees of patients with schizophrenia. By using simple random sampling technique, seventy participants were recruited in each group. The psychosocial function and psychopathology symptoms of all participants ($n = 140$) were rated with personal and social performance (PSP) scale and brief psychiatric rating scale-extended version (BPRS-E), respectively.

Results: There was no significant difference in terms of age for both groups with mean age of attendees was 36.83 (SD = 10.73) and non-attendees was 39.07 (SD = 10.82). Total score of PSP in the attendees group was higher than the comparison group with significant difference (mean difference: 4.571 (95% CI: 0.607, 8.536), *P*-value < 0.001). It reflected that the attendees group had better psychosocial functioning. Both social useful activity and disturbing and aggressive behaviour domains were significantly different, in which the attendees group showed lower PSP mean score with mean differences of 0.257 (95% CI: –0.055, 0.569) and 0.171 (95% CI: 0.016, 0.327), respectively with both *P*-value < 0.001. Lower PSP reflected that the group had better psychosocial function.

Conclusion: Psychosocial rehabilitation attendees significantly have better psychosocial function compared with non-attendees. Therefore, it is recommended that all patients with schizophrenia should attend the psychosocial rehabilitation to have better psychosocial functions.

Effects of Holy Quran Listening on Physiological Stress Response in Intensive Care Unit Patients

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Abstract

Objectives: The intensive care unit (ICU) is one of the most stressful environments among various clinical settings. ICU patients are not only compromised by the illness, but they also faced with a wide range of stressors such as pain, fear, unfamiliar environment, threat of death and loss of interaction with family and friends. Stress and anxiety will increase the sympathetic tone (sympathetic nervous system) and stimulate the hypothalamus-pituitary-adrenal (HPA) axis response. Stressful circumstances as well as chronic diseases may alter the normal cortisol mechanisms resulting in marked increases in plasma levels. Thus, high stress response will lead to delayed healing and prolong stays in ICU. Recitation of Quran by the sick person or for the sick person (ruqya) has shown to have direct healing effect on the sick person. Holy Quran listening is the most suitable way for the patients in reduces stress responses during ICU stay. This study is to examine the effectiveness of holy Quran listening (HQL) in reducing stress response among ICU patients.

Methods: A randomised controlled clinical trial was conducted in the ICU. Total 94 subjects were recruited and randomly assigned to either control ($n = 49$) or holy Quran listening ($n = 45$) group respectively. The intervention group was given HQL via headphone for 7 h while control group given no music. Primary measures include mean blood pressure, heart rate, systolic blood pressure, diastolic blood pressure, serum cortisol level and capillary blood sugar.

Secondary outcomes include duration of stay in intensive care unit, total usage of insulin and sedation.

Results: The HQL group shows clinically significant in reducing HR, SBP over time and duration of stay in ICU. Serum cortisol level is clinically significant stable in HQL group. However, there are not significantly reduced in total usage of sedation and insulin.

Conclusion: HQL is one of the methods to reduce stress response and reduced length of stays in ICU.

Keywords: length of stay, sympathetic nervous system, anxiety, music, intensive care units

Comparison of Efficacy Pre-Operative Pregabalin 150 mg Versus Placebo as Prophylaxis for Chronic Post-Surgical Pain in Post-Traumatic Lower Extremity Surgery

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Abstract

Objectives: Pregabalin usage pre-operatively has proven to reduce the complication of chronic post-surgical pain (CPSP), as a result of insult to nerves during the operation, for instances, post-sternotomy in cardiac surgery, herniotomy, post-amputation of lower limb, mastectomy and spine surgery. But little we know about post-trauma to lower extremities' surgery. Thus, we are conducting a study of peri-operative pregabalin whether it can reduce the occurrence of CPSP in this patient group.

Methods: This was a prospective, randomised, single blinded study conducted in operation theatre, Hospital Universiti Sains Malaysia (HUSM). One-hundred and sixteen patients who met the inclusion criteria were recruited and divided randomly to two groups. Oral pregabalin 150 mg (n = 58) or placebo (n = 58) given pre-operatively and 12 h post-operation. Mode of anaesthesia and analgesia intra-operative and post-operative will be decided by respective anesthetist. All means of analgesia as per standard. Patients will be followed-up at respective orthopedic clinic in HUSM two months after surgery. They will be evaluated the presence of CPSP using the IASP definition.

Results: A total of 104 out of 116 patients were analysed, 12 patients could not be traced. Percentage-wise, 87% are male while 29% are female. Mean age was 29 years old, in which there is no difference in age distribution among two groups. In terms of race, 96.6% are Malay; followed by 2.6% Chinese and 0.9% are of other race group. As much as 49.1% of patients in the placebo group experienced chronic post-surgical pain (CPSP) while 20.4% of patients in the pregabalin group had CPSP (P = 0.002). This shows reduction in 28.7% of incidence of having CPSP. Prevalence of nausea and vomiting, and sedation score among the two groups were not significantly different (P = 0.891, P = 0.56).

Conclusion: Pregabalin is effective in reducing the incidence of chronic post-surgical pain among post-traumatic patients with lower extremity surgery.

Keywords: pregabalin, prospective studies, chronic pain, pain management, lower extremity

The Relationship of Fruit Intake with Brain Derived Neurotrophic Factor Protein Level Among Adolescents in Terengganu

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Abstract

Objectives: This study was conducted to determine the relationship of fruit intake with brain derived neurotrophic factor (BDNF) protein level among adolescents in Terengganu.

Methods: A total of 135 students aged between 14 and 16 years old had been selected in simple random sampling involving six secondary schools in urban and rural Kuala Terengganu and Hulu Terengganu districts. School visit had been conducted for the blood collection and fruit intake assessment. BDNF protein level was measured from the respondents' blood serum.

Results: This study found that 44.36% respondents consumed adequate intake of two or more servings fruits per day. The median of fruit intake among adolescents in urban (2.07, IqR = 1.78) were significantly (P < 0.001) higher compared in rural (1.46, IqR = 1.67). While the median of BDNF protein level were significantly (P < 0.001) higher among adolescents with adequate intake of fruits (228.60, IqR = 173.90) compared to adolescents with inadequate intake (50.76, IqR = 98.42). There was a significant and positive correlation between fruit intake and BDNF protein levels (rs (8) = 0.736, P < 0.001).

Conclusion: This study found that there is a correlation between fruit intake and BDNF protein level

among adolescents in Terengganu. Higher fruit intake was associated with BDNF protein level. It is hoped that this positive correlation will encourage more adolescents in consuming fruits. A better understanding of the relationship between fruit intake and BDNF level will thus play a pivotal role in controlling neuronal survival, and synaptic function in the central nervous system among adolescents.

Management of Children with Autism Spectrum Disorder at Tertiary Care: What are the Predictors Associated with Its Satisfaction Among Caregivers?

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Abstract

Objectives: Caregivers are the initial gatekeepers in the health care management of children with autism spectrum disorder (ASD).

Methods: This cross-sectional study aimed to determine the factors associated with caregivers' satisfaction with tertiary health care services in managing children with ASD in Kelantan. The satisfaction scores of 227 main caregivers of confirmed ASD children were assessed with a parent satisfaction scale (PSS) Malay version questionnaire.

Results: The analysis showed that caregivers with an underlying medical problem and who had children undergoing occupational therapy for two months or more had reduced PSS scores (adjusted b = −5.98; 95% CI: 1.02, 3.91; P = 0.004), (adjusted b = −5.31; 95% CI: 1.00, 9.46; P = 0.016). Nevertheless, the analysis showed that caregivers who

were concerned with their children's sleeping problems, who had been informed about parental support group, who were satisfied with speech and occupational therapy appointments, who were satisfied with waiting times at tertiary care clinics, and who were satisfied with their doctor's knowledge and experience had higher PSS scores (adjusted b = 1.65; 95% CI: 0.12, 3.17; P = 0.035), (adjusted b = 3.11; 95% CI: 0.48, 5.73; P = 0.021), (adjusted b = 1.66; 95% CI: 0.20, 3.11; P = 0.026), (adjusted b = 3.82; 95% CI: 1.35, 6.31; P = 0.003), (adjusted b = 2.25; 95 % CI: 1.12, 3.98; P < 0.001) and (adjusted b = 4.39; 95% CI: 2.51, 6.29; P < 0.001), respectively.

Conclusion: This study elucidated the importance of understanding caregivers' satisfaction in attaining care for their ASD children and highlighted the need to promote factors that would increase caregivers' satisfaction with current ASD services.

Beyond the Scar: A Cross-Sectional Study of Post-Major Burn Psychological Impact and Quality of Life

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Abstract

Objectives: The objectives of this study is to determine the effect of total body surface area (TBSA) of burn towards post-traumatic stress disorders (PTSD), depression and quality of life (QOL) in major burn cases.

Methods: Major burn patients that were treated in Burn Unit were carefully selected. A total number of 55 patients with two years post burn were invited voluntarily to participate in answering the psychometric batteries which are the Malay translated PTSD checklist for civilians (MPCL-C), the Malay translated Beck depression inventory (Malay-BDI) and the Malay translated burn specific health scale (Malay BSHS-B).

Results: There is a significant relationship between TBSA and PTSD (DF 2,52 = 6.81, P < 0.05), also between TBSA and depression (DF 2,52 = 19.88, P < 0.05). There is

a significant effect of TBSA towards quality of life (DF1,53 = 15.70, $P < 0.05$). It reflects the higher level of TBSA leads to poor quality of life; with 1% increase in TBSA we expected the change of QOL was –16.5. Overall, the model explained 22.80% variance changes in quality of life.

Conclusion: Major burn patients ideally should be screened for PTSD and depression in view of the vulnerability of their psychological state. Post burn QOL assessment is the next tool to be instilled in burn management as it reflects patients' current well-being.

Keywords: burns, post-traumatic stress disorders, depression, quality of life, burn units

The Effect of Oral Carbohydrate Drink Versus Oral Plain Water Pre-Operatively to Gastric Volume, pH and Glucose Level in Elective Non-Abdominal Surgery

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Abstract

Objectives: Overnight fasting before surgery has been a routine practice to reduce residual gastric volume (RGV). With the introduction of the enhanced recovery after surgery (ERAS) concept, there has been a major change in established practice whereby patients are able to continue with solid food up to 6 h and clear fluids up to 2 h prior to surgery. Instead of plain water, taking carbohydrate (CHO) drink has become a new alternative concept of allowing some amount of drink pre-operatively which could improve patient's satisfaction. The aims of the study were to compare the RGV, gastric pH and random blood sugar (RBS) of patients given CHO drink compared to oral plain water three hours prior to surgery.

Methods: Eighty eight patients with American Society of Anesthesiologists classification I–II who underwent elective non-abdominal surgery under general anaesthesia, were randomised into two groups; Group A ($n = 44$) received 200 mL of oral (CHO)–rich drink (Resource ™) and Group B ($n = 44$) received 200 mL of plain water 3 h before anesthesia. Both groups were tested for RGV based on the volume from Ryle's tube aspiration after induction, gastric pH using pH-indicator strips (MColorpHast™) and RBS before and after induction.

Results: The RGV was significantly lower for group A [7.50 (8.69) versus 13.59 (10.45) mL; $P = 0.004$)] while pH level and glucose level were comparable for both groups ($P = 0.672$, $P = 0.235$, respectively).

Conclusion: Pre-operative CHO drink up to 3 h before surgery significantly reduced RGV but did not differ in terms of pH and RBS if compared to conventional plain water practice.

Keywords: fasting, water, blood glucose, personal satisfaction, anesthesiologists

Coping Strategies of Medical Students: A Multi-Centre Study

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Abstract

Objectives: Coping strategies is behavioral and psychological effort employed by individuals to minimise stressful events. Growing literature has proposed the alarming mental health prevalence among medical students and coping role in mediating them. This study aims to determine common coping strategies used among medical students and its association with demographic data relevant to curriculum evaluation.

Methods: We conducted the study in two institutions using similar curriculum design between January to April 2018. Through convenient sampling, a total of 748 medical students from Year 1 to Year 5 participated in this study. The participants were asked to fill in self-administered questionnaire that included demographic variables and Brief COPE. Brief COPE is a validated questionnaire, consists of 30 items measuring 15 coping strategies against 4-response categories. We performed statistical analysis on the obtained data using SPSS version 24.

Results: The most common strategies used were religion, acceptance, positive reinterpretation, active coping and planning. Significant associations include higher problem-focused and emotion-focused coping among pre-clinical students, higher humor and substance abuse coping among male students and higher positive reinterpretation, religion, venting, emotional and instrumental support in

female students. The findings also suggested lower use of denial coping in students receiving scholarship, and higher religion, restrain and lower substance abuse coping in students with higher CGPA.

Conclusion: Common coping strategies used among medical students were problem-focused and emotion-focused strategies. However, some students were using maladaptive strategies and this finding may inform curriculum developers on the focus of professional development and support programme.

Keywords: medical students, psychological adaptation, surveys and questionnaires, curriculum, substance-related disorders

BASIC MEDICAL SCIENCES: POSTER PRESENTATIONS

Metformin Useful in Preventing Atherosclerosis in Type-2 Diabetes Rat Model

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Abstract

Objectives: To determine the effects of metformin in preventing atherosclerosis in a type-2 diabetes rat model.

Methods: Male Sprague-Dawley rats were divided into three groups of 12 rats each: normal controls (NC), untreated diabetic rats (DM) and diabetic rats treated with metformin (DM + metformin). Rats were fed a high-fat diet for four weeks before diabetes induction with low dose intraperitoneal injection of streptozotocin. After six weeks, diabetic rats were treated with metformin 300 mg/kg/daily for four weeks. Rats were then sacrificed and their thoracic aortas removed. Levels of oxidative stress parameters, superoxide dismutase (SOD) and malondialdehyde (MDA and the inflammatory marker, tumour necrosis factor-alpha (TNF-α) were measured in the thoracic aorta tissue samples using the enzyme linked immunosorbent assay (ELISA) technique. Thoracic aortas were also divided into sequential cross sections and stained for histological analysis and measurement of intima-media thickness, a marker for subclinical atherosclerosis.

Results: Treatment with metformin significantly increased the levels of SOD in diabetic thoracic aorta compared to untreated diabetics (DM + metformin: 2.76 ± 0.36 versus DM: 1.25 ± 0.18 U/mg protein; $P = 0.005$). Metformin treatment significantly reduced the levels of MDA (DM + metformin: 1.96 ± 0.56 versus DM: 3.66 ± 0.39 nmol/mg protein; $P = 0.0067$) and TNF-α (DM + metformin: 4.70 ± 0.74 versus DM: 13.47 ± 2.20 pg/mL; $P < 0.001$) in the thoracic aorta of diabetic rats. Intima-media thickness of the thoracic aorta was significantly reduced in metformin-treated diabetic rats (DM + metformin: 112.60 ± 8.39 versus DM: 197.30 ± 15.39 μM; $P = 0.05$)

Conclusion: Metformin improves intima-media thickness of thoracic aorta in a type-2 diabetes rat model. This may occur due to the improvement of oxidative stress and inflammation in the blood vessel.

Keywords: metformin, Sprague-Dawley rats, tumour necrosis factor-alpha, oxidative stress, atherosclerosis

Establishment of Serum Free Chemically Defined (M-Cil) Medium to Study the Interplay Between Myofibroblasts and Colorectal Cancer Cell Lines

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Abstract

Objectives: Interactions between pericryptal myofibroblasts and neoplastic cells contribute to the progression of colorectal cancer (CRC). One of the concerns of in vitro studies performed to evaluate the interplay between these two cell types is the lack of specific medium to be used, especially in co-culture experiments. Foetal bovine serum (FBS) which is routinely included in complete culture medium formulation, contains multiple unknown components that can influence the cell properties and gene expression thus affect the experimental outcome. This study aims to develop serum free chemically defined medium to study the interplay between myofibroblasts and CRC cell lines.

Methods: Several potential components for the medium were tested. The effects of the selected components on myofibroblasts and CRC cell lines growth

(monoculture and co-culture condition) were analysed using immunofluorescence staining and proliferation assay. The qRT-PCR analysis was performed to assess the influence of serum free medium on the expression of myofibroblast-specific gene (AOC3).

Results: A serum free chemically defined medium named as M-CIL was developed. M-CIL medium supported the proliferation of myofibroblasts and produced minimal effect on the proliferation of CRC cell lines. AOC3 expression in myofibroblasts was strongly affected by two of the components of M-CIL medium, namely fetuin and hydrocortisone.

Conclusion: M-CIL medium which was designed with known and defined components, proved to be a suitable alternative to complete medium for co-culture experiments of myofibroblasts and CRC cell lines.

Keywords: coculture techniques, culture media, cell proliferation, colorectal neoplasms, cell line

Sleep Recovery Improves Endothelial Damage Following REM Sleep Deprivation in Animal Model

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Abstract

Objectives: Rapid eye movement (REM) sleep is a crucial component of sleep. REM sleep deprivation (REMsd) is associated with oxidative stress but whether it can affect the vascular endothelium needs further evaluation. The aim of the study is to examine the effects of REMsd on the vascular endothelium.

Methods: Twenty-eight male Sprague-Dawley (SD) rats were divided equally into four groups: free-moving control rats (FMC), 72-h REMsd rats, tank control rats (TC) and 72-h sleep recovered rats after 72-h of REMsd (SR). Rats were deprived of REM sleep using the inverted flowerpot technique. Blood pressure was monitored during the study. Descending thoracic aorta was isolated for histopathological examination and measurement of oxidative stress markers including total antioxidant capacity (TAC), superoxide dismutase (SOD) and malondialdehyde (MDA).

Results: A significant increase in systolic blood pressure was observed in REMsd group when compared to other groups. Histologically, there were features of endothelial damage in REMsd group. A significant decrease in SOD activity but increase in MDA levels were observed in REMsd compared to FMC group. Most of the changes in REMsd group were significantly reduced in SR group.

Conclusion: This study provides convincing evidence for the development of endothelial damage following REM sleep deprivation. The damage could be due to lipid peroxidation that initiated by superoxide anion. The changes however revert during sleep recovery.

Keywords: Sprague-Dawley rats, REM sleep, oxidative stress, lipid peroxidation, sleep deprivation

Effect of the Dual ERBB1/ERBB2 Tyrosine Kinase Inhibitor, Lapatinib, on FHS-74-INT Human Normal Small Intestinal Cell Line

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Abstract

Introduction: Lapatinib is an orally administered, dual ErbB1/ErbB2 tyrosine kinase inhibitor (TKI). It is effective in ErbB2+ve breast cancer treatment. However, lapatinib is associated with diarrhoea with an incidence of 47%–75%. The mechanism of ErbB1 TKI-induced diarrhoea remains unclear. ErbB1 or epidermal growth factor receptor is expressed in gastrointestinal mucosa whereby the primary site for drug absorption is intestine. Thus, administration of ErbB1 oral TKI may disrupt gut homeostasis, leading to diarrhoea. Nevertheless, further investigations are required.

Objectives: This study was carried out as a preliminary observation on the effect of lapatinib on human normal small intestinal cell line.

Methods: FHs-74-Int human normal small intestinal cell line was cultured using Dulbecco's modified Eagle's medium: Nutrient mixture-F12 (DMEM-F12) supplemented with 10% foetal bovine serum, 2% penicillin-streptomycin, 2 mM L-glutamine, 30 ng/mL epidermal growth factor and 10 µg/mL insulin, in a 37 °C incubator with 5% CO_2. The half maximal inhibitory concentration (IC_{50}) of lapatinib on Fhs-74-Int cells was evaluated via MTS assay. To further confirm the findings, the cells were incubated with lapatinib and

incubated at 24 h, 48 h or 72 h prior to trypan blue exclusion assay.

Results: MTS results showed the IC_{50} of lapatinib on FHs-74-Int was 8.0 ± 0.76 μM while in trypan blue exclusion assay lapatinib induced 11.64 ± 3.11%, 42.22 ± 2.89% and 55.51 ± 2.18% cell death at 24 h, 48 h or 72 h, respectively.

Conclusion: Lapatinib exhibited cytotoxic effect on normal small intestinal cells which may explain ErbB1 TKI-induced diarrhoea in patients administered with the drug. Research is underway to investigate a link between ErbB1 expression and diarrhoea.

Keywords: lapatinib, ErbB-2 receptor, epidermal growth factor receptor, diarrhoea, cell death

Immunohistochemical Analysis of Rats' Intestinal Zonula Occludens (ZO)-1 Following Three Months Paraquat Exposures

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Abstract

Objectives: This study aimed to evaluate the effect of repeated paraquat exposures for three months on rat's intestinal zonula occludens (ZO)-1 tight junction protein expression.

Methods: A total of 12 male Sprague-Dawley rats were randomly divided into four groups of three rats each. Three groups of rats were administered with a diet containing paraquat at 30 mg/kg, 60 mg/kg and 100 mg/kg concentrations, respectively, while the control group was fed with a normal diet. All rats were sacrificed three months following their respective treatments. The distal ileum, proximal colon and distal colon were collected for immunohistochemical analysis of ZO-1 using an HRP-based DAB staining method.

Results: A dose-dependent reduction of ZO-1 protein expression was observed in the apical region of ileum and proximal colon as compared to the control group. Increased perinuclear intensity mainly in the glandular epithelial cells was also seen in the proximal colon of paraquat-treated groups.

Conclusion: The preliminary findings showed that repeated exposures to paraquat may alter the expression and distribution of ZO-1 tight junction protein in the intestine, suggesting the possible involvement of gastrointestinal tract as an early event of disease pathogenesis.

Keywords: paraquat, ileum, colon, tight junctions, zonula occludens-1 protein

Preliminary Study on the Effect of Tualang Honey and Its Silver Nanoparticles on Kainic Acid Mediated Behavioural Changes in Male Rats

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Abstract

Objectives: Excitotoxicity is a key mechanism in neurodegenerative diseases. Kainic acid (KA) is used to induce experimental excitotoxicity. Therefore, the present study investigates the effect of Tualang honey (TH) and its silver nanoparticles (THSN) on KA mediated behavioural changes in rats.

Methods: Adult Sprague-Dawley male rats ($n = 18$) were randomised into six groups ($n = 3$/group): i) Control, ii) THSN, iii) KA, iv) TH + KA, v) THSN + KA and vi) Topiramate + KA groups which were pre-treated orally with

distilled water, THSN (50 mg/kg body weight), Tualang honey (1.0 g/kg body weight) or Topiramate (40 mg/kg body weight), respectively, five times at 12 h intervals. Saline or KA (15 mg/kg body weight) were injected subcutaneously 30 min after last oral treatment. The latency to onset of the first generalised seizures (FGS) was recorded. Behavioural assessments such as open field test (OFT) to assess the locomotor activity and novel object recognition test (NORT) for learning and memory were performed after 24 h of KA administration.

Results: On KA treatment, FGS was observed. But there is a trend of amelioration of FGS on TH+KA and THSN+KA groups when compared to KA group. Pre-treatment with TH and THSN improved learning and memory as evidenced by increased recognition index in NORT when compared to untreated KA group. Interestingly, OFT results of THSN+KA group improved the locomotor activity when compared to untreated KA group.

Conclusion: These findings suggest that pre-treatment with TH and THSN provides protective effect on KA mediated behavioural changes in male rats. However, further study required to understand the mechanism of action.

Keywords: kainic acid, honey, metal nanoparticles, Sprague-Dawley rats, learning

Immunoregulation of TNFR2⁺ TREG and Immune Activation of CD103⁺ DC in Modulating Asthma

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Abstract

Objectives: The aim of this study is to determine the proportion of CD103⁺ dendritic cells (DC) and TNFR2⁺ regulatory T (Treg) cells in peripheral blood mononuclear cells (PBMC) of the asthmatics compared to non-asthmatic controls. The interaction of CD103⁺ DC with Treg cells are capable to modulate immune response by inducing immune tolerance. In addition, the secretion levels of pro-inflammatory cytokines; IL-4 and IFN-γ and anti-inflammatory cytokines; IL-10 and TNF were measured to support the findings on CD103⁺ DC and TNFR2⁺ Treg cells.

Methods: PBMC was isolated using Ficoll-gradient centrifugation and stained with DC markers; HLA-DR, CD11c, CD11b, CD86 and CD103, and Treg markers; CD3, CD4, CD25, TNFR2 and Foxp3. The lymphocytes phenotyping was assessed by flow cytometer and analysis was performed using FlowJo software. The cytokines were measured using MILLIPLEX® proteomic immunoassays.

Results: The results showed no significant but increasing trend of HLADR⁺CD11c⁺, decreasing CD11b⁺CD103⁺ and CD86 in asthmatics, while significant increase of Foxp3 expressing by CD25⁺TNFR2⁺ cells ($P = 0.0450$), CD25⁻TNFR2⁺ ($P = 0.0195$) and CD25⁻TNFR2⁻ ($P = 0.0195$) as compared with non-asthmatic controls. In addition, significant increased levels of IL-10 ($P = 0.0198$) and TNF ($P = 0.0211$) supported on the cellular findings.

Conclusion: We suggested that the increased levels of Treg in blood would continuously suppress the Th2 cells activation in the circulation which is also supported by the increased of anti-inflammatory cytokines IL-10 and TNF. Overall, functional immunoregulation of the regulatory cells, particularly Treg exhibit immune suppression and induce immune tolerance in the linked with the immune activation by the antigen presenting cells (APC).

Keywords: regulatory T-lymphocytes, type II tumor necrosis factor receptors, cytokines, HLA-DR antigens, immune tolerance

Mutation Analysis of *BEST1* in Best Vitelliform Macular Dystrophy: A Molecular Case Study in a Malay Family

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Abstract

Objectives: To analyse sequence variations of the *BEST1* in a Malay family with BEST vitelliform macular dystrophy (BVMD).

Methods: Blood was collected from a Malay family consist of parents and their five children. Genomic DNA was extracted from whole blood using QIAamp kit. The *BEST1* consists of 11 exons. Polymerase chain reaction (PCR) primers were designed specifically to amplify the selected hot spots (exon 2, 3, 4, 6, 7 and 8). The PCR products were then sent for direct DNA sequencing to determine the variations in the *BEST1*.

Results & Conclusion: In this study, three of their children were diagnosed with BVMD based on clinical examination while the parents and the other two children were normal at the time of blood taken. All the three children (eldest, third and fourth) with BVMD and one of the normal

children (second) had the same patterns of variation in their *BEST1* gene. They carried homozygous mutant c.109T>C and heterozygous c.219C>A, c.851A>G. The other normal child (youngest) had different pattern compared to his brothers. He carried heterozygous c.109T>C, c.219C>A, and homozygous wild type c.851A>G. The father carried homozygous mutant c.109T>C, c.219C>A and homozygous wild type, c.851A>G. While the mother carried heterozygous c.109T>C, c.851A>G and homozygous c.219C>A. No mutation found in exon 4, 6 and 8 for all the subjects. This is the first molecular study done in Malay patients. However, our current findings are still inconclusive in correlating *BEST1* mutation with BVMD. Further molecular analysis with the whole *BEST1* screening might be useful to explore the involvement of this gene in BVMD.

Keywords: *vitelliform macular dystrophy, exons, DNA sequence analysis, mutation, genomics*

using pulse wave analysis combined with pharmacological challenge.

Results: Compared to normal controls, patients with hypercholesterolaemia presented with significantly higher numbers of CD144 EMP count; 4.12/μL ± 4.00 and 1.68/μL ± 1.71 (P = 0.02) and reduced EDV that indicates poorer endothelial function; 3.14% ± 4.14 and 6.30% ± 1.00 (P = 0.01). CD31+/42– and CD62e counts were also higher in patients with hypercholesterolaemia although not significant. There was also a significant inverse correlation between CD144 count and EDV (r = –0.55, P = 0.007).

Conclusion: CD144 EMP is associated with endothelial dysfunction in patients with hypercholesterolaemia. It has a potential to be used as a biomarker for endothelial dysfunction.

Keywords: *endothelium, cell-derived microparticles, flow cytometry, hypercholesterolemia, pulse wave analysis*

Endothelial Microparticle Expressing CD144 is Associated with Endothelial Dysfunction in Hypercholesterolaemia

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Abstract

Objectives: Endothelial microparticles (EMP) are emerging as promising surrogate biomarkers for endothelial dysfunction as the currently available methods of assessing are tedious and time consuming. The aim of this study is to identify the expression level of CD31+/42–, CD144 and CD62e EMP in patients with hypercholesterolaemia and healthy controls.

Methods: Forty subjects [20 hypercholesterolaemics and 20 controls] were studied. Briefly, EMP was harvested from the plasma by ultracentrifugation. Quantification of CD31+/42–, CD144 and CD62e was done by using flow cytometry analysis. Endothelial function was assessed by measuring endothelial dependent vasodilatation (EDV)

Sol-Gel Derived Novel Spherical Nano-Calcia Stabilised Zirconia

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Abstract

Objectives: Zirconia-based ceramic composites such as yttrium-stabilised tetragonal zirconium polycrystals (Y-TZP) and ceria-stabilised tetragonal zirconia polycrystalline/alumina nanocomposites (Ce-TZP/A) have been widely used in dental application. However, superior hardness, extensive post sintering shrinkage, low temperature aging decomposition and phase transformation are some issues that need to be accounted. Even though the fabrication of CaO stabilised zirconia has been established, the description regarding the stabiliser particle size is not well documented so far especially for dental application. Hence, in the present work, spherical nanosized CaO coated onto zirconia (CSZ) composite has been designed to provide high surface area which affords better microstructure with good material properties.

Methods: CSZ nanocomposite was successfully synthesised by sol-gel method in ethanolic solution at ambient temperature. The reaction process involved three steps namely dissolution of salt, precipitation of salt and calcination of composites at elevated temperature. The

as-prepared nanocomposite was characterised by Fourier transform infrared (FTIR) spectroscopy and Field emission scanning electron microscopy (FESEM) for its chemical bonding and surface morphology, correspondingly.

Results: The presence of Ca-O and Zr-O bond were detected from FTIR analysis indicative of successful formation of CSZ nanocomposite.

Conclusion: Lower average particle size of 33 nm of spherical CSZ nanocomposite from FESEM play an important role in providing high surface area for dental application.

Keywords: zirconium oxide, zirconium, nanocomposites, fourier transform infrared spectroscopy, post and core technique

A Nested Allele-Specific Multiplex Polymerase Chain Reaction Method for the Detection of IL-6, TNF-A and TGF-B1 Genes in Human Subjects

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Abstract

Objectives: The objective of this study was to develop nested allele-specific multiplex polymerase chain reaction (PCR) techniques and used this method to detect the polymorphisms of interleukin-6 (IL-6), tumour necrosis factor-α (TNF-α) and transforming growth factor-β1 (TGF-β1) genes in human subjects.

Methods: The DNA was extracted from leucocytes. Primers specific at the 3′-end for the polymorphic sites were designed. A two-step PCR method was developed. In the first PCR, regions of interest in the IL-6, TNF-α and TGF-β1 genes were specifically amplified. This was followed by parallel second PCR using primers that were designed to have specific 3'-ends, which were manipulated to differentiate single nucleotide changes at the specific loci during PCR amplification. PCR was performed on Gene Amp PCR System 2700 (Applied Biosystem, USA). Sequencing was performed to validate the test results.

Results: Specific bands corresponding to the amplified product of interest were obtained. Nine genetic polymorphisms were analysed by nested allele-specific multiplex PCR and genotyping. The method was reproducible and specific. The amplified sequences showed 100% homology to the IL-6, TNF-α and TGF-β1 sequences.

Conclusion: The method was found to be simple, rapid, specific and reproducible for detection of IL-6, TNF-α and TGF-β1 genes.

Keywords: interleukin-6, multiplex polymerase chain reaction, tumour necrosis factor-alpha, genetic polymorphism, transforming growth factors

Difference in Sonication Distance and Cell Size in Affecting Near Field Temperature Variation During Successive Volumetric MR-HIFU Sonication in Experimental Phantom Study

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Abstract

Objectives: The purpose of this study is to determine correlation between sonication cell size and sonication distance with mean peak temperature changes within the near field and using MR thermometry during MR-HIFU. The other purpose of this study is to formulate a prediction of therapeutic response in between sonication cell size and sonication distance with mean peak temperature changes within the near field.

Methods: Sonication distance and sonication cell size was controlled, respectively. Total of 125 sonication was performed. For each five repetitions of sonication for a preset parameter, a mean peak temperature is measured. Univariate (Pearson correlation) and multivariate (linear regression) was performed to determine correlation and determine predictions of therapeutic response is done. The level of significance is calculated and the *P*- value of less than 0.05 is statistically significant.

Results: There is statistically significant correlation between sonication cell size and mean peak temperature

changes in the near field, with *P*-value less than 0.05. However, no statistically significant correlation between sonication distance and mean peak temperature changes, with *P*-value of 0.08. Regression analysis indicates that sonication cell size significantly predicted mean temperature changes in the near field. [R2 = 0.654, $F(1, 23)$ = 46.307, $P < 0.001$]. Predicted mean temperature changes in the near field is equal to 37.1 + 0.32 (sonication cell size) in millimeters when the mean temperature is measured in Celsius. Mean temperature changes in the near field increased 0.32 with each millimeter of sonication cell size.

Conclusion: There is statistically significant correlation between sonication cell size and mean peak temperature changes in the near field however no statistically significant correlation between sonication distance and mean peak temperature changes.

Keywords: temperature, linear models, sonication, thermometry, cell size

Morphological Identification of Stingless Bee (*Geniotrigona thorasica*) Brain

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Abstract

Introduction: Stingless bees are the most abundant and morphologically diversified group of eusocial corbiculate bees (Apidae: Meliponini). Stingless bee lacks a functional sting but showed highly eusocial organisation that practicing cooperative work through division of labour and worker castes. Recent studies found evidence that honeybees (*Apis* sp.) are able to perform higher order cognition where their sociability and navigation skills may give rise to concept of learning. The bee emerged as an important model organism for studying social behaviour and cognitive science.

Objectives: The goal of this study was to evaluate a two dimensional morphology of stingless bee (*G. thorasica*) brain that might be resulting in similar features as the brain of honeybee.

Methods: *G. thorasica* is the largest stingless bee in South East Asia and exhibits complex age related social cognitive. The hematoxylin and eosin staining were used for isolating and characterising the structures of bee brain's anatomy.

Results: Result showed that the brain size of stingless bee was obviously smaller than the brain of honeybee. The anatomy identified in stingless bee brain includes mushroom body, antennal lobe, central body, medial calyx, lateral calyx, medulla, lobula, lamina, subesophageal ganglion, pedunculus, protocerebral lobes, glomerulus and lateral horn. The stingless bee brain showed identical structures to honeybee standard brain of previous study.

Conclusion: The fact that the stingless bee is not stinging, high numerical abundance, identical offspring from single queen, short life cycle and able to provide a cost-effective management, the stingless bee is a great candidate as a model for neuroscience and cognition study.

Keywords: bees, cognition, learning, brain, staining and labeling

Protective Effects of Tualang Honey Against Oxidative Stress and Hippocampal Changes in Male Rat Offspring Exposed to Prenatal Stress

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Abstract

Objectives: This study investigated whether Tualang honey (TH) administration to the pregnant dams could prevent alteration of memory, changes in the hippocampus histology, levels of malondialdehyde (MDA) and N-methyl-D-aspartate (NMDA) receptor in the hippocampus of adult rat offspring following prenatal stress.

Materials and Methods: Twenty-four pregnant rats were divided into control (C), stress group (S) and stress group treated with TH. Stress was given in a form of restraint stress three times daily from day 1 of pregnancy until delivery. TH at 1.2 g/kg was given daily throughout pregnancy. Twenty-four adult off spring were sacrificed following novel object recognition test. Their hippocampus were identified and isolated. Histolological changes, level of MDA and NMDA receptors in the hippocampus were determined.

Results: The offspring from TH group showed significant increase in recognition memory ($P < 0.05$) and improved hippocampal histology compared to S group. The group also demonstrated a significantly lower level of MDA and NMDA receptors ($P < 0.01$; $P < 0.05$, respectively) compared to S group. There were no differences in the parameters investigated between C and TH groups.

Conclusion: The study has shown that TH administration was associated with improvement in memory, histology, levels of MDA and NMDA receptors in the hippocampus in the rat offspring exposed to prenatal stress. The results suggest the protective role of Tualang in prenatally stressed rat offspring.

Keywords: *pregnancy, N-methyl-D-aspartate receptors, honey, memory, hippocampus*

Malaysian Bee Bread Attenuates Changes in Anthropometrical Parameters, Lipid Profiles and Organ Weights in Male Rats Fed with High-Fat Diet

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Abstract

Objectives: The main aim of this study was to determine the effect of Malaysian bee bread on weight gain, food intake, Lee obesity index, body mass index (BMI), organ weights (testis, heart, kidney, liver and brain), epididymal fat, serum total cholesterol (TC), triglyceride (TG), high density lipoprotein (HDL), low-density lipoprotein (LDL) and leptin levels in male rats fed with HFD.

Methods: Thirty-two adult male Sprague Dawley rats were divided into four groups (n = 8/group), namely normal control (NC), HFD (high-fed diet), HFD plus bee bread (HFD + B) and HFD plus orlistat (HFD + O) groups. Bee bread (0.5 g/kg/day) and orlistat (10 mg/kg/day) were given by oral gavage for 12 weeks.

Results: HFD group had a significant increase in weight gain relative to NC and HFD + B groups. Lee obesity index in the HFD + B group was within the normal value while BMI was significantly decreased relative to the NC group. The epididymal fat was significantly increased while relative weight of testis was significantly decreased in HFD relative to NC and HFD + B. Relative weights of heart, kidney, brain and liver were also significantly decreased in HFD group relative to NC group. However, significant increases of leptin levels, total cholesterol and TG levels while a significant decrease of LDL level in HFD group relative to NC and HFD + B groups were observed.

Conclusion: Malaysian bee bread showed its anti-obesity effect by improving lipid profiles which needs further study for its exact mechanism of action.

Keywords: *Sprague-Dawley rats, triglycerides, cholesterol, body mass index, propolis*

Preliminary Study of High Dose Stingless Bee Honey Treatment as an Anti-Depressant in Mice Model

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Abstract

Introduction: Depression has become a commonly diagnosed mental disorder worldwide. In this study, the stingless bee *(Meliponini sp.)* honey or also known as 'Kelulut' honey which is found in tropical countries have been tested for antidepressant effects. The honey possessed high anti-oxidant content with several positive effects to the brain.

Methods: The nuclear magnetic resonance (NMR) spectroscopy was used to identify the composition in the stingless bee honey. Twenty mice were divided into two groups (N = 10) and treated with 2000 mg/kg (Group 1) and distilled water as negative control (Group 2). Both groups were exposed to chronic immobilisation stress for 2 h per day in the restraint stress tubes for 28 days. The treatments begin after 14 days of stress. They were given 1 h prior to stress session via oral gavage. Anxiety-like behaviour was assessed after day 21 of stress through elevated plus maze (EPM) and the anti-depressant-like behavioural test was assessed using force swimming test (FST) after day 28 of stress. The time spent (seconds) in the closed arm and immobility times were recorded.

Results: NMR analysis identified several metabolites including phenylalanine, alanine, tyrosine, valine, acetate, lactate, trigonelline and ethanol. In EPM behavioural analysis, Group 1 showed shorter time spent in closed arm compared to Group 2. Group 1 also showed lower immobility time in FST compared to Group 2 to indicate honey treatment gave anti-depressant like effect on treated group.

Discussion: Phenylalanine previously reported to be involved in the production of monoamines. Human body changes phenylalanine to tyrosine, another amino acid that is needed to make proteins and brain chemicals including L-dopa which further converted into catecholamines including dopamine, epinephrine and norepinephrine that positively regulate brain activities.

Conclusion: The result showed that stingless bee honey possess a potential as anti-depressant therapy possibly due to phenylalanine composition in stingless bee honey.

Keywords: *bees, honey, depression, phenylalanine, behaviour rating scale, anti-depressive agents*

Radioprotective Potential of *Apium graveolens* Against the Effects of Ionising Radiation on Bone Architecture in Mice: An In Vivo Micro-Computed Tomography Study

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Abstract

Introduction: Accelerated bone loss caused by high radiation dose in radiotherapy increase the risk of fracture and osteoporosis in cancer patient. Celery (*Apium graveolens*) as natural approach to bone health and osteoporosis is proving to be highly effective in increasing bone health due to its high content of mineral materials and flavonoids.

Objectives: To evaluate the effects of celery juice (CJ) supplementation on the trabecular microarchitecture of radiation-induced bone loss in mice models by using in vivo micro-computed tomography (μCT) analysis.

Methods: Eighteen female ICR mice were randomly divided into three groups (n = 6/group): control (normal diet), radiation (normal diet + irradiation) and supplementation (CJ + irradiation). Supplementation group received CJ supplementation for seven consecutive days ad libitum prior to irradiation and continued until being subjected to bone imaging. Both radiation and supplementation groups were irradiated on day 8 with a total dose of 2Gy. Trabecular bone architecture was analysed using micro-computed tomography third day after irradiation.

Results: Trabecular structure of radiation group showed significant deterioration in trabecular number, trabecular separation, connectivity density and increased in degree of anisotropy at proximal tibia metaphysic ($P <$ 0.05) when compared to non-irradiated control. However, no significant difference was found in trabecular bone architecture between control and supplementation groups.

Conclusion: These findings suggest that CJ supplementation significantly reversed the bone damage induced by therapeutic radiation and supplementation of CJ to daily diet increased the bone health in mice model of radiation-induced bone loss.

Keywords: *microtomography X-ray, flavonoids, anisotropy, radiation dosage, bones*

Effects of DHA and Tualang Honey on the Brain Cytokines Following Chronic Stress Exposure in Rat Model

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Abstract

Objectives: Exposure to chronic stress has been shown to affect various inflammatory cytokine in the brain. Previous studies suggested that docosahexaenoic acid (DHA) and Tualang honey (TH) can provide some protection against the negative effects of chronic stress to our body. Therefore, the aim of the present study was to experimentally assess the protective effects of DHA, TH and their combination (DHA-TH) on the activity of inflammatory cytokines in the brain of rats following exposure to chronic stress.

Methods: Fifty male Sprague-Dawley rats aged 6 weeks old were divided into five groups: (i) control; (ii) stress exposed; (iii) DHA treated (900 mg/kg body weight twice daily via oral gavage); (iv) TH treated (2.0 g/kg body weight twice daily via oral gavage) and (v) combined DHA-TH treated. Except the control, all other groups received stress regimen which consisted of combination of restraint stress and force swimming stress test for 28 days. Selected inflammatory cytokines, TNF-α, IL-6 and IFN-γ in brain homogenates were measured using ELISA method.

Results: Concentration of TNF-α, IL-6 and IFN-γ in the DHA treated, TH treated and combined DHA-TH treated group were significantly lower when compared to the stress exposed group ($P <$ 0.05). However, there is no statistical difference between combined DHA-TH and DHA-treated and TH-treated groups

Conclusion: Consumption of DHA and TH may be effective in lowering brain inflammatory cytokines under chronic stress condition. However, combining these two substances would not reduce the cytokines level even further than taking either of them alone.

Keywords: *honey, Sprague-Dawley rats, docosahexaenoic acid, cytokines, combined modality therapy*

Impact of Anode Heel Effect on Entrance Surface Dose of Ovaries in Lumbosacral Spine Radiography: Phantom Study

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Abstract

Objectives: The aim of this research was to study the impact of heel effect on entrance surface dose (ESD) of ovaries in lumbosacral radiography with two orientations of the phantom in terms of tube axis.

Methods: Siemens Multix Top general radiography system was used. Imaging exposure factors were chosen as, 77 kVp and 32 mAs for anteroposterior (AP) and 79 kVp and 40 mAs for lateral lumbosacral examination. An anthropomorphic whole-body phantom PBU-50 was scanned. Each set of projection was obtained in two different orientations of the phantom, i.e., head was positioned in the direction of cathode end, and then it was placed towards the anode end of the X-ray tube. Optically stimulated luminescent dosimeters (OSLDs) were used to measure ESD at ovaries site.

Results: When the phantom's feet were placed to the cathode end of the X-ray tube in AP and lateral projections, mean dose received by the ovaries was 31.4% and 42.9% higher than the opposite orientations of phantom, respectively.

Conclusion: Patients head must be positioned near the cathode side to achieve substantial reduction in radiation dose to ovaries.

Keywords: *radiation dosimeters, radiography, imaging phantoms, radiation dosage, electrodes*

Effect of Conventional Calcium Hydroxide and Double Antibiotic Paste on Viability and Attachment of Dental Pulp Stem Cells to Irrigated Radicular Dentin

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Abstract

Introduction: Complete disinfection is essential for regenerative endodontic procedure achieved by root canal irrigation and followed with medication. These medicaments should be bactericidal and biocompatible to promote the viability of the stem cells for complete root maturation and apex closure. Different protocols used by clinicians have given variable outcomes. Thus, there is a need to confirm the discoveries.

Objectives: To evaluate the effects of conventional calcium hydroxide [$Ca(OH)_2$] and double-antibiotic paste-containing metronidazole-ciprofloxacin (DAP) on dental pulp stem cells (DPSCs) viability on irrigated radicular dentin.

Methods: Thirty standardised dental chips were irrigated with 2.5% sodium hypochlorite followed by normal saline (NaCl) rinse. There were 3 group of treatments; samples treated with 1 mg/mL DAP (GD) (n = 10), samples (n = 10) treated with 500 mg/mL $Ca(OH)_2$ (GC) and irrigated only samples (n = 10) as a control (GI). After a 4-week incubation, all the samples were rinsed with NaCl before Dental pulp stem cells (DPSCs) seeding. PrestoBlue viability assay was performed on day 1, 3 and 7 while scanning electron microscope (SEM) analysis was conducted on day 7. Data were analysed using the One-way Anova.

Results: GC showed a significant increase in the stem cell viability as compared to GI ($P > 0.05$), in contrast to GD results against GI ($P < 0.05$). SEM images supported the cell viability findings. The results suggested that the effect of $Ca(OH)_2$ on chemical properties of the dentin promotes the viability of DPSCs. However, the DAP-treated dentin inhibited DPSCs proliferation.

Conclusion: Long-term treatment of irrigated radicular dentin with conventional $Ca(OH)_2$ promotes DPSCs viability.

Keywords: *anti-bacterial agents, regeneration, disinfection, stem cells, dental pulp*

Ameliorating Effect of Black Tea Extracts on Cadmium Chloride Induced Impaired Oral Glucose Tolerance and Histopathology Pancreas in Rats

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Abstract

Objectives: To evaluate the ameliorating effect of black tea extracts (BTE) on cadmium chloride ($CdCl_2$) induced impaired glucose tolerance and pancreas histopathological measurements in rats.

Methods: Adult rats were divided into four groups ($n = 6$/group): i) group I (normal saline); ii) group II ($CdCl_2$, 1.0 mg/kg, b.wt; i.p); iii) group III (BTE, 2.5 gm tea leaf/dl of water that is 2.5% of aqueous BTE) and iv) group IV (cadmium chloride + BTE).

Results: The results clearly indicate cadmium induced changes in glucose tolerance and pancreas tissue architecture when compared to the control group. Supplementation of BTE remarkably improves glucose tolerance and pancreas tissue histopathology of rats exposed to $CdCl_2$.

Conclusion: This preliminary study clearly reflects therapeutic effects of BTE on $CdCl_2$ induced impaired glucose tolerance and pancreatic tissues damage.

Keywords: cadmium, tea, glucose intolerance, pancreas, carbohydrate metabolism, glucose

Preparation and Characterisation of Gold Nanoparticles by Chemical Reduction Method for Cancer Therapeutic Applications

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Abstract

Objectives: The present pilot study describes the synthesis and characterisation of gold nanoparticles (AuNPs) to be used as nanocarriers for chemotherapeutic agent.

Methods: In this study, AuNPs were prepared by a chemical reduction route according to the Turkevich method. Here, AuNPs were synthesised via the reduction of gold chloride by trisodium citrate. The resulting AuNPs were characterised by ultraviolet-visible (UV-Vis) spectrometry and Fourier-transform infrared spectroscopy (FTIR). In this study, the effects of temperature and concentration of trisodium citrate, which act as reducing agent on the maximum absorbance peak of the AuNPs, were investigated.

Results: The colour of synthesis solution changed from light yellow to ruby-red colour indicating the formation of AuNPs. It was found that the increasing temperature of the reaction and concentration of trisodium citrate resulted in decreasing maximum absorption of colloidal AuNPs while reducing the synthesis time. UV-Vis spectra showed that the absorption peak of AuNPs within the range of 521 nm–527 nm, which corresponds to the localised surface plasmon resonance of AuNPs. FTIR analysis showed a

broader peak observed at 3326.84 cm^{-1} and 1637.23 cm^{-1}, attributed by the O-H and C=O bonds, respectively.

Conclusion: Results obtained from this pilot study will be further pursued to improve drug delivery system by loading the chemotherapeutic agent on the gold nanoparticles targeting the tumour site.

Keywords: fourier transform infrared spectroscopy, ultraviolet spectrophotometry, surface plasmon resonance, metal nanoparticles, gold compounds

CLINICAL SCIENCES: POSTER PRESENTATIONS

Barriers to Postpartum Contraceptive Use Among Women with Recent Caesarean Delivery in Kelantan: A Qualitative Study

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Abstract

Objectives: This qualitative study aims to explore the barriers to contraceptive use among women at one year after caesarean delivery in Kelantan. By understanding these barriers, strategies to increase the uptake of contraceptives in a state with the lowest contraceptive prevalence may be suggested.

Methods: Semi-structured face-to-face interviews were conducted from April 2018 until February 2019. This study involved 15 postpartum women at 12 to 15 months who had caesarean deliveries in the government tertiary centres in Kelantan and were not using contraceptives. Women were selected through maximum variation sampling. An interview guide was developed and tested prior to the implementation of actual interviews. Interviews were audio-recorded, transcribed verbatim and analysed through thematic analysis. Qualitative data was managed with RQDA software.

Results: The themes that emerged during the face-to-face interviews were internal and external barriers. Internal barriers were limited awareness and knowledge of various contraceptive methods, negative perception towards contraceptives, low perceived needs for contraceptives, limited self-efficacy for contraceptives use and negative experience in previous contraceptive use. The external

barriers were social barriers, cultural and religious barriers plus health care barriers.

Conclusion: There remains a need to develop approaches that correct misperceptions, deliver adequate relevant information and involve individuals most affluent of contraceptive decision making. Future research involving health care providers, key community leaders and policy makers are needed to understand barriers that exist at policy level.

Keywords: contraception, cesarean section, contraception behavior, qualitative research, decision making

Review on the Determinant Factors of the Outcome of Universiti Sains Malaysia Postgraduate Candidates for Primary Master of Medicine (Anaesthesiology) Conjoint Exam

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Abstract

Objectives: Postgraduate Primary Exam for Master of Medicine in Anaesthesiology (MMed [Anaest]) has been conjoined with two other local universities, Universiti Malaya (UM) and Universiti Kebangsaan Malaysia (UKM) since 2013. In 2014–2015, two other universities, Universiti Putra Malaysia (UPM) and International Islamic University Malaysia (IIUM) have also been included in the Conjoint Exam. The aims of the study were to determine the determinant factors of the success of the exam during the first attempt in terms of academic background, environmental and socio-economic factors.

Methods: This was a cross-sectional, simple sampling study, involving 73 subjects, who passed Anaest Conjoint Exam either at first or subsequent attempts. They were divided into two groups; Group 1: Candidates who passed at first attempt. Whereas, Group 2: Candidates who passed after subsequent repeat exam. The subjects were required to respond to self-administered questionnaire

Results: Out-campus candidates who worked outside Peninsular Malaysia had higher chance to pass at first attempt by 81% (adjusted OR 0.19; 95% CI: 0.04–0.99); P = 0.048). Small discussion group during study leave also increase the chance to pass at first attempt by 41% (adjusted OR 0.59; 95% CI: 0.39–0.90); P = 0.013). However, longer years in medical services (adjusted OR 1.62; 95% CI: 1.03, 2.54; P = 0.036) and spouse from non-healthcare profession (adjusted OR 6.56; 95% CI: 1.57, 27.54; P = 0.010) lower the chance to pass at first attempt.

Conclusion: Out-campus training outside Peninsular Malaysia and discussion group during study leave showed significant factors led to high chance of first attempt success in the exam. The experience in medical services and spouse from non-healthcare profession seemed to be the significant factors lower the chance to pass at first attempt.

Keywords: anesthesiology, cross-sectional studies, universities, Malaysia, surveys and questionnaires

A Liveborn Double Aneuploidy with Simultaneous Occurrence of Edwards and Klinefelter Syndromes—A Rare Case Report

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Abstract

Objectives: Double aneuploidy is the coexistence of aneuploidies involving two different chromosomes in one individual. We present a rare case of a live-born male infant with double aneuploidy involving trisomy 18 (Edwards syndrome) and an additional X-chromosome (Klinefelter syndrome).

Case Report: A full-term male infant weighing 1,500 g was born as the ninth child of unrelated parents of advanced age. The mother had one abortion previously and antenatally she had gestational diabetes and hypertension. Third-trimester ultrasonography suggested oligohydramnios. Proband's clinical features include macrocephaly, prominent occiput, low set ears, triangular face, receding chin, wide spaced nipple, overlapping fingers, rocker bottom feet, micropenis, undescended testis and right inguinal hernia. The patient succumbed to death within hours of birth. Conventional cytogenetic analysis showed 48, XXY, 14pss, +18 in 30 GTG banded metaphases.

Conclusion: Double aneuploidy may involve either two different autosomes or an autosome and a sex chromosome (as in the present case). Coexistent Edwards and Klinefelter syndromes are extremely rare worldwide with only 14 case reports of live-born infants globally. Our case is the first report from Malaysia. When both conditions coexist, clinical features of Edwards syndrome predominate, as seen in the present case. Advanced maternal age which is implicated in the aetiology of trisomies was also observed in the present case. Most reported cases died during the neonatal period with the exception of one case who lived till the age of 15 months.

Keywords: Klinefelter syndrome, trisomy 18 syndrome, aneuploidy, X-chromosome, Malaysia

Assessment and Comparison of the Effect of Oral *Channa striatus* Extract Versus Glucosamine Sulphate Administration in Serum Cartilage and Inflammatory Marker in Knee Osteoarthritis Patients

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Abstract

Objectives: Currently, the treatment of osteoarthritis (OA) is to provide pain relief. However, concerns on the side effects with the current treatment has encouraged studies to search for natural products. *Channa striatus* (CS) is a freshwater fish that is proclaimed as natural remedies to various illnesses by local communities without scientific evidence. Therefore, the objective of this study was to evaluate the effect of oral administration of CS extract (500 mg/day) in knee osteoarthritis (KOA) patients on the level of chondroprotective marker—cartilage oligomeric protein (COMP) and inflammatory marker—Cyclooxgenase-2 (COX-2) and compared it with glucosamine sulphate (GS) treated patients.

Methods: This was a randomised and double-blind trial comparing the effect of CS extract (500 mg/day) and GS (1,500 mg/day) treated groups. The number of patients in CS and GS groups were $n = 36$ and $n = 37$, respectively. Blood samples were collected at different-time periods (baseline and six months) to assess the level of COMP and COX-2 using commercially available kits. The results were expressed in median and interquartile range (IQR) and $P < 0.05$ considered as statistically significant.

Results: Seventy-three patients enrolled in this study. There were 30 male (41.1%) and 43 female (58.9%) patients with mean age of 53(7) years old. There was a significant reduction of COMP ($P < 0.05$) and COX-2 ($P < 0.05$) levels within the groups of GS and CS extract. However, there is no significant median difference in the reduction of COMP and COX-2 levels observed between GS and CS extract treated groups. Thus, CS extract showed as effective as GS in having chondroprotective and anti-inflammatory effect on KOA patients.

Conclusion: In conclusion, CS extract on a six months supplementation was found to have reduction properties on the cartilage and inflammatory markers. This could suggest that CS can be an alternative treatment derived from natural source for the treatment of KOA.

Keywords: knee osteoarthritis, double-blind method, fishes, oral administration, pain

Assessing Low Back Pain Among Nurses in Public Hospitals: A Validation Study of BACKS Tool

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Abstract

Objective: This study provided internal structure evidence of construct validity of BACKS tool among nurses. BACKS refer to Back Apparatus developed by a strong collaboration between experts in Universiti Kebangsaan Malaysia and Social Security Organisation. The tool, which was developed in Malay language, aimed to assess work-related chronic low back pain in Malaysia.

Methods: A cross-sectional study involving 1,290 nurses in six public hospitals in Penang, Malaysia was conducted. Job demands sub-scale consists of two factors namely Physical Demand (five items) and Psychological Demand (nine items). The data was analysed by confirmatory factor analysis.

Results: The analysis showed two- and one-factor models fit the data equally good (CFI and TLI > 0.9, RMSEA < 0.08, SRMR < 0.08) with good composite reliability. However, the two-factor model showed poor discrimination between the Physical Demand and Psychological Demand factors ($r = 0.944$).

Conclusion: Although the discrimination could be justified based on the content of the items, it is recommended to consider combining the factors into a single factor in future studies.

Keywords: statistical factor analysis, cross-sectional studies, low back pain, public hospitals, social security

Ambulance Response Time Does Not Influence Outcome of Major Adverse Cardiac Events

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Abstract

Objectives: We explored the association between ambulance response time (ART) and major adverse cardiac events (MACE) in patients diagnosed with acute coronary syndrome (ACS) in Malaysia.

Methods: This study was a retrospective cohort analysis conducted from 2014 until 2016 involving two emergency medical services (EMS) in Malaysia. Adult patients diagnosed with ACS and utilised the EMS to come to hospital were followed up to assess MACE within 30 and 90 days from the primary event. Multivariable logistic regression analysis was performed to evaluate the interaction between ART and MACE.

Results: One hundred patients with an average age of 59.7 (SD = 12.7) years old were included in the analysis. The average ART was 21.7 (SD = 10.4) minutes. Twenty-nine patients developed MACE at 30 days and 40 patients developed MACE at 90 days post ACS. No significant association was found between ART and occurrence of MACE 30 and 90 days post ACS (OR = 0.99; 95% CI: 0.95, 1.03; $P = 0.679$ and OR = 0.98; 95% CI: 0.95, 1.02; $P = 0.446$, respectively).

Conclusion: ART was not significantly associated with MACE after both 30 and 90 days onset of ACS. This

underscores the need for not driving ambulance with high speed when responding to ACS cases.

Significance of High Haemoglobin F Among Anaemic Patients in Hospital Universiti Sains Malaysia

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Abstract

Objectives: Anaemia is a condition usually associated with a variety of diseases. In normal adults, haemoglobin F (Hb F) levels are usually less than 1%. There are several acquired and inherited conditions associated with elevated Hb F. To determine the signifance of high Hb F among anaemic patients.

Materials and Methods: This study involved 100 anaemia patients with Hb F level ≥ 1.0%. High-performance liquid chromatography (HPLC) was used to determine the Hb F and Hb A2 level. Multiplex ARMS (MARMS)-PCR and GAP-PCR were performed for those samples with high Hb A2 level > 3.2% and normal Hb A2 level (≤ 3.2%) to detect β and δβ thalassaemia, respectively.

Results: The mean age of patients is 20.34 ± 18.65 year with female 57.0% pre-dominance. The majority were Malays (96.0%). There was a moderate negative correlation and statistically significant between Hb F level with Hb level, ($r = -0.400$, $P < 0.05$) while the correlation between Hb F level with mean corpuscular volume (MCV) and mean corpuscular haemoglobin (MCH) showed weak negative correlation but not statistically significant, ($r = -0.124$, $P > 0.05$)($r = -0.118$, $P > 0.05$). For MARMS-PCR, 45 (69.2%) mutation detected in 65 samples. In GAP-PCR, 1 of 35 (2.9%) cases show positive for δβ-Thai deletion. There was a significant difference between the mean of Hb F level of patients with and without β and δβ mutation ($P < 0.05$).

Conclusion: Hb F level can be used as a marker to differentiate the causes of anemia between acquired and inherited haemoglobin disorder.

Keywords: high pressure liquid chromatography, foetal hemoglobin, hemoglobinopathies, hemoglobins, polymerase chain reaction

Comparison of the Pre-Emptive Analgesia of Low Dose Intravenous Ketamine in Combination with Intravenous Parecoxib Versus Intravenous Ketamine Alone on Patients Undergoing Laparotomy Under General Anaesthesia

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Abstract

Objectives: Pre-emptive analgesia is important in reducing post-operative analgesia. The aim of this study is to compare the efficacy of low dose intravenous (IV) ketamine in combination with IV parecoxib versus IV ketamine alone as pre-emptive analgesia for patients undergoing laparotomy under general anaesthesia.

Methods: A total of 48 patients, scheduled for elective laparotomy, were randomised into two groups of pre-emptive analgesia: i) Group K-P: low dose IV ketamine 0.3 mg/kg in combination with IV parecoxib 40 mg ($n = 24$) and ii) Group K: IV ketamine 0.3 mg/kg alone in combination with placebo (normal saline) ($n = 24$). The drugs were administered before induction of anaesthesia. Both groups received standardised technique of general anaesthesia and post-operative analgesia using patient-controlled analgesia of morphine (PCAM). Both groups were assessed for dosage of rescue analgesia requirement at the recovery bay, pain intensity using visual analogue scale (VAS) over 24 hours, time for the first PCAM demand, total dose requirement of opioids intra as well as post-operatively.

Results: Group K-P showed less dosage of rescue analgesia requirement at recovery bay [6.25 (16.9) versus

20.8 (28) mg; P = 0.035], longer time for the first PCAM demand [70.8 (40) versus 22.2 (15.7) min; $P < 0.001$], less total requirement of PCAM within 24 h post-operatively [8.04 (4.6) versus 16.8 (6.5); $P < 0.001$] and less VAS at an hour and subsequently 4 hourly interval over 24 h than Group K. There was no significant difference in the total dose requirement of opioids intra-operatively.

Conclusion: Combination of IV ketamine and IV parecoxib was more effective as pre-emptive analgesia than IV ketamine alone for post-laparotomy patients on post-operative PCAM.

Keywords: general anesthesia, ketamine, parecoxib, laparotomy, visual analog scale

Measuring Apoptosis Activity in Erythroid Progenitors Cultured from HBE/BETA Thalassaemia Patients Using Two Different Methods

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Abstract

Objectives: Apoptosis is a programmed cell death that is an accepted architype to occur as a part of ineffective erythropoiesis of β-thalassemia patients. The Vi-CELL™ Cell viability analyser is fast easy to handle and needs only 2.5×10^4 cells compared to 10^5 cells per sample for flowcytometry. Measuring apoptosis in cultured erythroid progenitors grown from peripheral blood mononuclear cells (PMNCs) using flowcytometry and the Vi-CELL™ Cell viability analyser.

Methods: Approximately 1–2 million MNCs collected from seven participants (two normal and five HbE/β thalassaemia patients) was plated in 2 mL of complete erythroid expansion media (StemSpan™ serum-free expansion medium II (SFEM II) plus StemSpan™ erythroid expansion). Erythroid cell apoptosis was evaluated on day 14 of cell culture by flow cytometry using ANNEXIN V-FITC APOPTOSIS DTEC KIT and CELL™ Cell viability analyser. *T*-test was used to compare the results of the two methods.

Results: The results from both methods were analysed using *t*-test. The mean of apoptosis was close in both methods with 44.07% for flowcytometry and 42.7% for Vi-CELL™ Cell viability analyser with *P*-value more than 0.05 (*P* = 0.8).

Conclusion: There was no significant difference between flow cytometry and Vi-CELL™ Cell viability analyser in measuring apoptosis of cultured erythroid progenitors. The later method found to be fast and easier with tally result that make it a good alternative to flow cytometry. However, for studying the dynamics of apoptosis flowcytometry is more preferred.

Keywords: cell culture techniques, thalassemia, erythropoiesis, flow cytometry, cell survival

Problems Associated with Insulin Injections Among Patients with Type 2 Diabetes in a Tertiary Hospital in Kelantan: A Focus Group Study

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Abstract

Objectives: To explore the problems encountered by patients who are on insulin injections.

Methods: Forty patients diagnosed with diabetes mellitus type 2 and treated with insulin injection at least three months durations were interviewed in groups of four to seven. The patients were purposively selected among those who had poor glycemic control (HbA1c > 8%) to achieve homogeneity in discussion.

Results: Out of 40 participants, 90% were Malays and married, 65% of them were male and 65% completed secondary education and had fixed monthly income. Their mean age was 56 years old and mean HbA1c of 10.1%. Fifteen (37.5%) of them were on basal bolus regiment.

Of 40 participants, 23 of them had experienced hypoglycemia particularly at night and early morning. These always happened when they were on insulatard and it disappeared when changed to analogue insulin. Half of the participants had experience pain at injection site. Most of them related the pain with multiple use of needle or injecting on fibrotic tissue. Nine of them had bleeding and three had experienced bruises. Eleven (27.5%) participants gained weight when started on insulin. Six participants concerned about money they needed to spend to buy needles and glucometer strips. Five participants stated the injection timing interfere with their daily activity. Four of them felt embarrassed to inject in public.

Conclusion: Hypoglycemia was the main problem patient had when injecting insulin. Other problems

include pain at injection site, bleeding, weight gain, financial constrain, inflexibility of injection timing and felt embarrassed to inject in public.

Knowledge, Attitude and Practice of Quit Smoking Guideline Among Primary Healthcare Providers in Kota Bharu Kelantan, 2019

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Abstract

Objectives: Primary healthcare (PHC) providers play a major role in promoting smoking cessation to their clients. The aim of this study was to describe the tobacco product use, KAP among PHC providers on quit smoking guideline (QSG) and its association with training status at Kota Bharu, Kelantan in 2019.

Methods: This was a cross-sectional study carried out among PHC providers in Kota Bharu district and were approached. Self-administered validated questionnaires were distributed to 215 participants. PHC providers were family medicine specialists, medical officers, assistant of medical officers and nurses. One-way ANCOVA was used to test the differences of the mean score KAP between training status of PHC providers.

Results: A total of 208 respondents completed the questionnaire. There were 16 (7.69%), all male smokers. Regarding knowledge, 157 (75.5%) answered incorrectly for 'assess' and 131 (63.0%) for 'assign' as one of the components of 5A's. Generally, respondents had good attitude and favourable practice in implementing QSG. However, 112 (53.8%) of respondents felt unrewarded with their effort in helping smoker to quit. The knowledge and attitude on QSG were not significantly different between trained and untrained of respondents. Those who had been trained had higher mean score in practising the brief advice [38.21 (36.74, 39.68)] compared to those who were untrained [34.38 (33.13, 35.64)].

Conclusion: Despite the presence of smokers among PHC providers and lack of understanding of the 5A's, PHC providers were delivering quit smoking intervention according to QSG. Training could improve the practice of brief advice to quit smoking.

Split Tummy Exercise Programme Improves Pelvic Floor Muscle Function of Postpartum Primigravida Mother with Diastasis Recti Abdominal

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Abstract

Objectives: This study aimed to investigate the effects of split tummy exercise programme (STEP) on pelvic floor muscle (PFM) strength and PFM endurance among postpartum primigravida women diagnosed with diastasis recti abdominal (DRA).

Methods: A single blinded, two arms randomised control trial was conducted among primigravida women diagnosed with DRA at 34- to 40-week pregnancy in Kuala Lumpur, Malaysia. Those who delivered a singleton pregnancy via spontaneous vertex delivery were only recruited through purposive sampling. The DRA was diagnosed when the gap was two or more finger width. Subjects were assigned to intervention (n = 20) and control group (n = 21). Intervention group received a home-based the STEP consist of three phases of gradual and progressive abdominal exercise, pamphlet and close monitoring by weekly telephone call and training twice during 8 weeks duration. PFM strength and endurance were measured at 8 weeks postpartum for three times using perineometer with a 10 s rest for the short holds, and 1 min rest for endurance holds. Analyses were done using independent t-test.

Results: Out of 41 subjects, 87.8% were Malays with the mean age of 28 years old. The highest education level (80.5%) was tertiary education and most of them (78%) were working. After the intervention, Pelvic floor muscle strength significantly improved with the mean difference of 5.89 (95% CI: 2.10, 9.68; P = 0.003). Pelvic floor muscle endurance also significantly improved with the mean difference of 1.11 (95% CI: 0.01, 2.22; P = 0.049).

Conclusion: The STEP was successful in improving PFM functions toward desirable outcome.

Prevalence and Characteristics of Measles Complications Among Laboratory-Confirmed Measles Cases in Johor, Malaysia

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Abstract

Objectives: Measles is a highly contagious vaccine-preventable disease that is endemic in Malaysia. The objective of this study was to determine the prevalence and characteristics of measles cases who developed measles complications in Johor.

Methods: It was a cross-sectional study among laboratory-confirmed measles cases in Johor using secondary surveillance database: *Sistem Maklumat Siasatan Measles* (SM2). Data reviewing was conducted from December 2018 until May 2019. All registered measles cases in 2017 were being analysed to determine the prevalence of measles complications, type of complications and the characteristics of those who developed measles complications.

Results: Out of 439 measles cases, 51 (11.6%) of them developed measles complications in which 36 (70.6%) of them were diarrhoea. Mean (SD) age of those who developed measles complications was 18 (15) years old with most of them are less than one year old (21.6%) and more than 30 years old (39.2%). Among those who were developed measles complications, 29 (56.9%) of them were male, 38 (74.5%) of them were Malays (74.5%), and 40 (78.4%) of them were from Kluang and Johor Bahru district. As for measles vaccination status, 24 (47.1%) cases had unknown status, 15 (29.4%) cases were unvaccinated, and 12 (23.5%) cases were vaccinated.

Conclusion: Measles complications are still prevalent in Johor and were expected to rise as measles incidence continued to increase. Further study needs to be done to determine the predictors of measles complications as it is crucial to reduce the morbidity and mortality of measles.

A Rare Case of Chromosome 22 Interstitial Duplication at Q12.1– Q13.1

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Abstract

Objectives: Chromosomal duplication, a very rare genetic condition harbouring varying amount of additional genetic material in one of the chromosomes, can lead to diverse clinical signs and symptoms. We present a rare case of interstitial duplication of chromosome 22 at 22q12.1-13.1.

Case Report: A male baby was born prematurely at 36 weeks of gestation via spontaneous vaginal delivery to unrelated parents. Antenatally, the mother was a gravida 3 with gestational diabetes mellitus on diet control. Both elder siblings are normal and no significant family history from the parental side. His birth weight was 1.7 kg and has several dysmorphic features such as hypertonic posture, prominent occiput, sparse eyebrows and eyelashes, hypertelorism, shallow orbit, flat nasal bridge, small nose, flattened tip of nose, flat philtrum, thin and down-turned lips, central cleft palate, low set ears, small chin, short neck with short sternum, hypoplastic nail and ambiguous genitalia. Conventional cytogenetic analysis showed 46, XY, dup(22)(q12.1q13.1)dn in 32 GTG banded metaphases. His parent's karyotypes came back normal suggesting a de novo process.

Conclusion: Chromosome 22q12.1q13.1 duplication is extremely rare, this being the first report from Malaysia. Owing to its rarity, no consensus of its constant clinical findings has been made so far. However, a few constant features have been noted mainly involving neuropsychiatry such as mental retardation and autism. No obvious aetiology could be implicated in this case as well as in previously reported cases.

Measuring Health Clinics' Workload Pressure in Kelantan Using the Workload Indicator of Staffing Needs

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Objectives: Proper distribution of human resources is an important factor ensuring high-quality performance and sustained service quality. The aim of this study was determining the workload pressure among medical officers in health clinics (HCs) in Kelantan.

Methods: A record review survey was conducted between January and April 2019 using human resources data for 2018 involving HCs in Kelantan. It included all the HCs in Kelantan and excluded community clinics. Workload pressure was determined using the World Health Organization's Workload Indicator of Staffing Needs. A high workload pressure was defined as a ratio between required and acquired medical officers of less than 1. Low workload pressure if more than 1 and normal workload pressure if equal to 1. The data were presented descriptively using means and standard deviations, as well as frequencies and percentages, according to the variable type.

Results: All 85 HCs in Kelantan were involved in the study; 90% (9/10) of the Kelantan districts recorded high workload pressure. Moreover, 58 (68.2%) HCs had high workload pressure. The districts of Tanah Merah, Tumpat, Pasir Mas and Kota Bharu had the most HCs with high workload pressure.

Conclusion: Large number of HCs with high workload pressure were found in areas with a high-density population, requiring huge coverage. In order to curb the issue, Kelantan State Health Department should develop better human resource distribution strategies to ensure the sustainability of quality care in HCs, Kelantan.

Keywords: workload, world health organisation, quality of health care, ambulatory care facilities, surveys and questionnaires

Positivity of Anti-Proliferating Cell Nuclear Antigen Antibodies in Various Autoimmune Diseases: Case Series and Mini Review

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Abstract

Objectives: In this study, we report cases associated with positive anti-proliferating cell nuclear antigen (PCNA) for a 10-year period starting from 2009 until 2018 and its role in the development of systemic lupus erythematosu (SLE). Autoantibodies to the PCNA are rare autoantibodies and are thought to be a specific biomarker for SLE. However, recent studies had found that it occur in 2%–6% of patients with systemic lupus erythematosus and can be detected in other systemic autoimmune rheumatic diseases (SARD).

Methods: We identified patients with positive anti-PCNA antibodies and correlate with the anti-nuclear antibody (ANA) testing which was done earlier. A total of seven cases of patients with positive anti-PCNA antibodies were detected. One case in 2014, three cases in 2017 and another three in 2018. The aim of this study is to look into the significance of positive anti-PCNA case in relation to various autoimmune diseases.

Results: Out of the seven cases of positive PCNA, three patients have SLE. They are two cases of lupus nephritis with Evan syndrome and one case of SLE with musculoskeletal involvement. The rest are seronegative autoimmune hepatitis, infant of SLE mother, one case of probable SLE and a case of idiopathic thrombotic purpura (ITP).

Conclusion: We conclude that anti-PCNA has low specificity for SLE. However, anti-PCNA in SLE cases might confer a more severe disease as most of the cases had severe renal and haematological involvement. Therefore, anti-PCNA in SLE cases would contribute to a more severe manifestation.

Keywords: anti-nuclear antibodies, proliferating cell nuclear antigen, autoantibodies, systemic lupus erythematosus, Evan syndrome

An Infrequent Gonosome-Autosome Mosaicism Co-Existent with Constitutional Telomeric Association

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Abstract

Introduction: Autosome-gonosome mosaic aneuploidy refers to mosaicism with sex chromosome and autosome aneuploidy in different cell lines in an individual. Telomeric associations occur when telomeres of different chromosomes fuse without visible loss of chromosomal material. We report here a patient with mosaic double aneuploidy involving trisomy-X and trisomy-13 with constitutional telomeric association of X chromosome.

Case Report: The child was born full term weighing 2,670 g, the youngest of three children to non-consanguineous parents. Her mother is a carrier for beta-thalassaemia. She has complete cleft palate and was referred to the plastic reconstruction surgical team. At 6 months old she was noted to have failure to thrive with dysmorphic features of widely separated anterior fontanelle, flat occiput, flat nasal bridge, hypertelorism, hyperpigmented skin whorls on bilateral lower limbs and trunk and umbilical hernia. Her blood sample was sent to the Human Genome Centre for conventional cytogenetic analysis. Conventional cytogenetic analysis with G-banding showed 47,X,tas(X;X)(q28;q28) [21]/ 47,XX,+13 [9] pattern.

Conclusion: Mosaic double aneuploidy is not frequently found, and clinical phenotype varies greatly depending on the chromosomes involved and the extent and type of tissue involved. The telomeric association is more frequently found in malignancies, and there have been less than thirty reports of constitutional telomeric associations. To our knowledge, this is the first case ever reported worldwide of mosaic double aneuploidy with a constitutional telomeric association of two X chromosomes in the trisomy-X cell line.

Keywords: *telomere, mosaicism, sex chromosome aberrations, trisomy, cytogenetic analysis*

A Randomised Controlled Trial of Patient-Controlled Analgesia Compared with Boluses of Analgesia for the Control of Acute Non-Traumatic Pain in the Emergency Department

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Abstract

Objectives: We have conducted a study to determine if the usage of patient-controlled analgesia (PCA) is more effective compared with boluses of morphine in relieving acute non-traumatic cause of pain. The aim of this study was to compare PCA, in terms of pain relief and patient satisfaction, with the conventional method of administering boluses of titrated intravenous opioid injections for the treatment of acute pain of non-traumatic origin in the ED.

Methods: Patients were randomised into two groups: i) the study group was given analgesia using PCA system, and ii) the control group was given boluses of morphine using titration method. Adverse events and total doses of morphine for each group were recorded. Patients were also given satisfaction questionnaires regarding their experience with the methods of analgesia.

Results: A total of 62 patients were enrolled. The Visual Analogue Score change for the PCA group was 5.83 (SD 2.38) and the bolus group was 6.7 (SD 2.03) ($P < 0.127$). The total dosage of morphine given to the bolus group was 4.23 mg (SD 1.54), lower than the PCA group, 5.29 mg (SD 2.116), it was statistically significant ($P = 0.027$). The patient satisfaction questionnaire revealed that the PCA group was more satisfied as compared to the bolus group.

Conclusion: Bolus group reduced total amount of morphine used. PCA provided more patient satisfaction and it should be recommended with an initial bolus dose as modality of acute pain treatment in non-traumatic cases in the emergency department.

Keywords: *morphine, acute pain, patient satisfaction, analgesia, surveys and questionnaires*

Digital Log-Book in the Setting of MMed (Internal Medicine) Training at Universiti Sains Malaysia: A Do-It-Yourself Experience

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Abstract

Introduction: Log-book has been the mainstay to record clinical experience in post-graduate professional training.

Objectives: Development, implementation and feasability assessment of a digital log-book system for the MMed (Internal Medicine) programme in the background of financial constrain.

Methods: In between February and May 2019, the above project was explored and implemented at the Hematology Unit, Department of Medicine, HUSM utilising existing available tools.

Results: A mobile adaptable front-end interface using community version Limewire® survey tool was developed linked to google sheet for visualisation via php scripts. The procured data were then analysed using Airtable ®. Links to digital demonstrative evidences; for site visits, procedures performed and cases experienced were uploaded as proof. Three MMed candidates completed their three months clinical haematology posting rotation using the above application. Their progress was monitored semi-real time, culminating with 82%, 64% and 43% completion of item activities respectively. The individual final reports were printed, initialised by the supervisor, and submitted. The submitted reports were devoid of patient's information.

Conclusion: The above project from conception to successful implementation, incured zero cost. Digital log-book provided additional benefit compared to traditional hardcopy ones. Unlike the latter, patients' data were anonymised in a hidden layer. The former also allows, more convincing demonstrative evidence with each claim. Trainee progress can also be digitally followed, allowing early intervention if progress is slagging.

Keywords: early intervention (education), internal medicine, training support, haematology, surveys and questionnaires

Family-Doctor Concept: Does It Improve Type 2 Diabetes Mellitus Patient's Satisfaction and Glycaemic Control?

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Abstract

Background: Family-doctor concept (FDC) started gradually in Kelantan since year 2015 and 32 out of 85 primary health clinics have implemented FDC in 2019. Studies show that FDC improved the type 2 diabetes mellitus (T2DM) patient's outcome as they have good doctor-patient interaction where they received proper explanation on the diagnosis, expected course of the illness, and having their concerns addressed.

Objectives: To compare the satisfaction level of doctor-patient interaction and glycaemic control between T2DM patients who attended FDC and non-FDC clinics in Kelantan.

Methods: A cross-sectional study was conducted throughout all 10 districts in Kelantan from January until March 2019 using interview-guided '*Skala Kepuasan Interaksi Perubatan-11*' (SKIP-11) and proforma. Multistage sampling was performed to select 20 health clinics randomly including 10 FDC clinics and 10 non-FDC clinics, and subsequently T2DM patients were recruited. Data was analysed using SPSS ver.24. Chi-squared statistics were used to compare the satisfaction level of doctor-patient interaction as well as glycaemic control among T2DM patients attended FDC and non-FDC clinics.

Results: A total of 772 T2DM patients involved in this study. Higher satisfaction level was seen among patients who attended FDC clinics, 174 (40.1%) compared to patients attended non-FDC clinics, 114 (33.7%). The satisfaction on distress relieve (P = 0.028) and interaction outcome (P = 0.033) were significant subdomains that differs between FDC and non-FDC clinics. A total of 126 (16.3%) patients has good glycaemic control (HbA1c ≤ 6.5%) with FDC clinics showed higher proportion of patients with good glycaemic control

compared to non-FDC, 83 (19.1%) versus 43 (12.7%) and it was statistically significant (P = 0.017).

Conclusion: Better satisfaction on doctor-patients interaction and glycaemic control among patients attended FDC clinics compared to non-FDC clinics.

Primary Intraocular Lymphoma Masquerading as Chronic Uveitis—A Case Report

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Abstract

Introduction: To report a rare case of primary intraocular lymphoma masquerading as chronic uveitis.

Case Report: A 42-year-old healthy gentleman, smoker, presented with progressive and painless decreased vision and floaters for seven months. Right eye was affected more than the left eye. Right eye vision was hand movement and left eye was 6/36. Ocular examination revealed conjunctival injections, mild anterior segment reactions and dense vitritis in posterior segment of both eyes. Infective and connective tissue diseases screening showed negative findings except for Mantoux test reading of 18 mm. A diagnosis of ocular tuberculosis was entertained and anti-tubercular therapy was instituted for a period of six months and oral prednisolone for three months. Despite these treatments, the vitritis progressed. Subsequently a diagnostic pars plana vitrectomy was performed in his right eye. Cytopathology of the vitreous specimen confirmed high grade B-cell lymphoma. However other systemic imagings were normal. He received intravitreal methotrexate in both eyes and intravenous methotrexate before radiotherapy. He is co-managed by Ophthalmologist, Haematologist and Oncologist. He has completed 15 doses of intravitreal methotrexate out of 23 doses that has been planned. On follow up, right eye vision was still hand movement due to cataract and left eye vision improved to 6/18 with improvement of vitritis.

Conclusion: Ocular lymphoma is a fatal intraocular malignancy that may present as uveitis of unknown origin either infectious or non-infectious. Therefore, a high index of suspicion of ocular lymphoma is mandatory in refractory uveitis cases to prevent treatment deferral.

The Hidden Globe: A Case Report on Traumatic Complete Dislocation of the Right Globe into Cranial Cavity

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Abstract

Objectives: To emphasise the role of point of care ultrasound (POCUS) as diagnostic modality in investigation of orbital trauma and to share an extremely rare case of eyeball dislocation into anterior cranial fossa.

Case Report: A 65-year-old gentleman presented to the hospital after a lorry's container accidentally fell over his face with complaints of right sided facial pain with loss of right eye vision and missing the right eyeball.

Patient was fully conscious, orientated and hemodynamically stable. There was absent of right eye from its orbit and mechanical ptosis of the upper eyelid with intact right facial nerve. Other neurological examinations were normal.

Results: Our POCUS showed that the distance between the right eyelid and right eyeball was significantly increased, there was loss of continuity of the orbital roof indicating fracture and dislocation of the bone fragments and the eyeball can be seen using the ultrasound to be dislocated superiorly and posteriorly into the anterior cranial fossa with intact right eye globe. All findings correlate with computed-tomography brain scan report.

Discussion: Eyeball dislocation into anterior cranial fossa is an extremely rare presentation and this is the 3rd case reported so far. Ultrasound has been proven to be demonstrated satisfactory sensitivity (92%) and specificity (100%) and positive predictive value (100%) in diagnosing orbital fractures when compared to CT scan.

Conclusion: Ultrasound users should aware of the ability of ultrasound to diagnose not just orbital wall fracture but also eyeball dislocation and determined its direction of herniation.

Primary B-Cell Lymphoma of Central Nervous System Presented as Panuveitis

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Abstract

Introduction: Primary central nervous system (CNS) lymphoma is high grade non-Hodgkin lymphoma, which is a rare CNS neoplasm accounting less than 2% of cerebral neoplasm and ocular involvement develops in about 25% of the patients. We report a rare case of primary CNS lymphoma with secondary to the eye.

Case Report: A 41-year-old female presented with blurring of vision and floaters in right eye for one month. Her visual acuity in the right eye was 6/24 and the left eye was 6/9. She showed a feature of panuveitis with 'leopard skin' pigmentation in the right fundus. Cytologic examination of vitreous sampling showed large B cell lymphoma. Magnetic resonance imaging of brain showed presence of pareito-occipital intra axial mass. She was diagnosed as a primary CNS lymphoma with secondary to the eye. She was started on systemic chemotherapy regime of 'DeAngelis' protocol. She had received four out of six cycles of chemotherapy. She responded well to the treatment. Her final visual acuity in the right eye improved to 6/9. There was no more panuveitis and the fundus shows patchy hypopigmented lesion.

Conclusion: Primary CNS lymphoma is uncommon condition. Patient may present with ocular manifestation as secondary involvement. Early diagnosis is challenging. Chemotherapy may help for the better outcome of the condition.

Keywords: non-Hodgkin lymphoma, B-cell lymphoma, central nervous system neoplasms, visual acuity, panuveitis

EML4-ALK in Non-Small Cell Lung Carcinoma: An Experience from Malaysia's Molecular Laboratory

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Abstract

Objectives: This study aims to analyse the demographical data and prevalence of echinoderm microtubule-associated protein-like 4-anaplastic lymphoma kinase (EML4-ALK) gene fusion in non-small cell lung cancer (NSCLC) samples analysed in a Malaysia's molecular laboratory.

Methods: Data were collected retrospectively from the sample registry beginning March 2014 until August 2018. EML4-ALK fusion testing (fluorescence in-situ hybridisation) was performed on selected cases, in accordance to the College of American Pathologists guidelines. Cases were epidermal growth factor receptor (EGFR) mutation negative, 60 years old or less or candidate for tyrosine kinase inhibitor (TKI) therapy. The data extracted were histological subtype, race, gender and EML4-ALK fusion status.

Results: There were 579 samples. Sixty-nine percent were male patients ($n = 402$) and 31% ($n = 177$) were female. There were 82% ($n = 441$) of NSCLC cases. Malay were majority (49%, $n = 286$), followed by Chinese (28%, $n = 161$), others (19%, $n = 109$) and Indian (4%, $n = 23$). Twenty-nine percent ($n = 166$) of patients were positive for EML4-ALK, 65% were negative ($n = 374$) and 7% ($n = 39$) were uninformative.

Conclusion: To our knowledge, this is the first report on prevalence of EML4-ALK in Malaysian population. Patient demography and NSCLC subtype reflected the prevalence in other countries. But, EML4-ALK prevalence is higher compared to other populations. This may be due to patients' age selection criteria and/or due to mix ethnicities. Based on this study, EML4-ALK testing is crucial as there are many patients who may benefit from TKI and case selection is essential to optimise cost. Further research is recommended for cost-benefit evaluation and finding answers behind the higher frequency found in this population.

Factors Predicting Delay in Door-to-Needle Time in Patient with ST Elevation Myocardial Infarction in Emergency Department Hospital Universiti Sains Malaysia

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Abstract

Objective: Thrombolytic therapy has been the mainstay of treatment in ST Elevation myocardial infarction (STEMI) reperfusion strategy due to its wide availability and ease of use. However, many centres are still struggling to achieve the targeted door-to-needle time (DNT) of 30 min due to many factors. Available studies yield contradicting results while local studies are still lacking in this area. This study aims to determine the factors associated with the delay in DNT among STEMI patients in Malaysia.

Methods: This observational, prospective study included 85 patients diagnosed with STEMI admitted to emergency department (ED), Hospital USM. Patients were interviewed during their stay in ED Hospital USM and were categorised into two groups: early ($\leq$ 30 min) and delay (> 30 min) depending on the time taken from their arrival to the time of initiation of thrombolytic agent. Collected information includes patient's demography (age, gender and race), clinical presentation, initial triage, working shift, electrocardiography (ECG) finding and cardiology consultation. Factors associated with early and delayed DNT were determined.

Results: Study found that only 31.8% of patients were able to be thrombolysed within 30 min of admission with the mean of delay in DNT of 98.38 (SD 98.86) min. Among the factors studied, different initial triage and ECG findings on ED admission were associated with delay in DNT.

Conclusion: Delay in DNT was still a major problem; with initial triage and ECG findings as two significant contributing factors.

Truth Unleashed: Ramadhan Month Does Affect Changes of Emergency Department Attendance in Kubang Kerian, Kelantan

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Abstract

Objectives: Emergency department (ED) serves as a gatekeeper to admission from all walks of life who needs medical attention. During Ramadhan, attendance to ED might also be affected by this holy month. In this study, the clinical characteristics and certain specific cases that attended to ED during Ramadhan month were analysed to see its association.

Methods: This is a retrospective, observational, cross sectional study which include all patients that fulfil all inclusion and exclusion criteria in ED during non-Ramadan and Ramadan month in 2018. The Ramadhan group (Group 1) consisted of patients admitted to ED during Ramadhan (16th May 2018–15th June 2018) and the pre-Ramadhan group (Group 2) consists of patients who were admitted during 30-day period before Ramadhan.

Results: A total of 1,315 participants were recruited from ED attendance list during Ramadhan and non-Ramadhan month. There were no significant association between month, socio demographic and related outcome except for gender ($P = 0.037$). Among medical emergency cases that were studied, there were significant association between community acquired pneumonia (CAP) that was triaged to red zone ($P = 2.446$, OR = 2.817; 95% CI: 0.711, 92.282) and age ($P = 0.011$, OR = 0.969; 95% CI: 0.946, 0.993) during Ramadhan month. For the surgical emergency cases, Acute Abdomen cases had significant association with age ($P = 0.003$, OR = 1.030; 95% CI: 1.003–1.059), gender ($P = 0.046$, OR = 0.423; 95% CI: 0.182, 0.984) and increased length of stay in ED ($P = 0.019$, OR = 0.995; 95% CI: 0.990, 0.999) during Ramadhan month.

Conclusion: Certain types of medical emergency cases or surgical cases presented to ED were significantly associated with month of Ramadhan and some clinical characteristics.

Factors Associated with Red Blood Cell Immunisation in Adult Solid Cancer Patients in Hospital Universiti Sains Malaysia

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Abstract

Objectives: Red blood cell (RBC) immunisation is a known detrimental effect following repeated transfusions in anaemic solid cancer patients. This study aims to determine the associated factors for RBC immunisation in adult solid cancer patients in Hospital USM.

Methods: This cross-sectional study involved 322 adult solid cancer patients treated in Hospital USM from October 2016 until February 2019. Transfusion and clinical profile were obtained from MyTransfusi online system and patients' records. Multiple logistic regression (MLR) was used to find significant associated factors and P-value < 0.05 was considered significant.

Results: Of 322 patients, majority were Malays (91%, $n = 293$) and females (61.2%, $n = 197$) with mean age of 52 years old. Breast cancer was the commonest diagnosis (32.3%, $n = 104$). The prevalence of solid cancer patients with RBC immunisation was 5.6% ($n = 18$). Majority were females (72.2%, $n = 13$). Presence of metastases (adjusted OR = 3.71, $P = 0.031$) and increased number of packed cell transfusion (adjusted OR 1.09, $P = 0.015$) were associated with RBC immunisation while O-blood group (adjusted OR = 0.13, $P = 0.015$) have reduced risk compared with other blood groups.

Conclusion: This study showed presence of metastases and increased number of packed cell transfusion were associated with increased risk of RBC immunisation while O-blood group had protected risk.

Barriers in Managing Female Sexual Dysfunction After Breast Cancer: A Qualitative Study Among Healthcare Providers in Kelantan, Malaysia

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Abstract

Objectives: To explore healthcare provider (HCP)s' experiences and challenges in managing female sexual dysfunction (FSD) among women with breast cancer.

Methods: This qualitative study was conducted using face-to-face in-depth interview with 15 healthcare providers from two tertiary hospitals in North-eastern state in Malaysia. The interviews were recorded, transcribed verbatim and transferred to NVIVO® for management of data. The transcriptions were analysed using thematic analysis.

Results: Three key barriers were identified: i) scarcity of knowledge; ii) sex and socio-cultural influence; and iii) specialty-centric. Most of HCPs had very narrow meaning of sexuality, unfamiliar with FSD definition and felt their training on sexual health issues were very limited. Talking about sex was seen to embarrass both parties and not their priority. Their focused more on the breast cancer treatment because it was more important for the patients in which it further limited their time to sit with patients discussing about sexual health and FSD.

Conclusion: Our findings suggest lack of knowledge, low priority to sexual health and socio-cultural issues influence the discussion about sexual health. Therefore, training on FSD and implementing ways for effective communication are essential for HCP's in managing breast cancer women.

Factors Associated with Perceived Stigma Among Schizophrenia Patients in Kelantan

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Abstract

Objectives: This study assesses the level of stigma among schizophrenia patients who received psychosocial rehabilitation (PSR) in Kelantan and the association between stigma level with sociodemographic factors, clinical features and function. Schizophrenia is the most disabling mental illness and highly stigmatised all over the world. Stigma itself can be divided into public stigma and personal stigma. The evolution of PSR development for people with severe mental illness in Malaysia started since the early 20th century which focused on helping individual patients through psychological, social and occupational techniques.

Methods: This is a cross-sectional study where 90 schizophrenia patients attending PSR in Kelantan were assessed using the devaluation-discrimination scale (DDS), the brief psychiatric rating scale-extended version (BPRS-E) and the personal and social performance scale (PSP). The data was collected through simple random sampling and analysed for the association between level of stigma and associated factors through linear regression.

Results: The stigma score was normally distributed. The mean score for the DDS was 2.70 (SD 0.388). Among the 90 patients, 59 (65.6%) had stigma score above the midpoint and 31 (34.4%) scored below the mid-point. The results showed significant association between stigma levels with age (P-value = 0.022) and depressive symptom (P-value = 0.007).

Conclusion: Perceived stigma among schizophrenia patients attending PSR in Kelantan is high and associated with age and depression. Further therapeutic intervention is needed to target personal stigma and depression such as Cognitive Behavioral Therapy or coping skill.

Keywords: brief psychiatric rating scale, psychiatric rehabilitation, schizophrenia, cross-sectional studies, social stigma

Clinicopathological Analysis and Mismatch Repair Proteins Pattern in Hereditary Non-Polyposis Colorectal Cancer of Malay Patients

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Abstract

Objectives: Hereditary Nonpolyposis Colorectal Cancer (HNPCC) is a syndrome caused by heterozygous germline mutations leading to loss of expression at least one of the four mismatch repair (MMR) genes which include MLH1, MSH2, MSH6 and PMS2. This study aimed to determine MMR proteins expression in colorectal cancer (CRC) among Malay patients using immunohistochemistry and their association with clinicopathological features.

Methods: A total of 54 Malay patients that fulfilled the revised Bethesda Criteria were selected. Immunohistochemical staining was performed on paraffin embedded tissue samples using monoclonal antibodies to MMR proteins; MLH1, MSH2, MSH6 and PMS2. Medical records were reviewed for clinicopathological information.

Results: Out of 54 cases, 20 were males and 34 females ranged between 17 to 60 years old (mean age 37.6, median age 38.5, SD 9.6). Twenty patients (37%) showed at least one abnormal MMR proteins expression with MLH1(38%) was the commonest, followed by PMS2 (32%), MSH2 (19%) and MSH6 (11%). The most common concurrent loss was MLH1 and PMS2 occurred in 8(14.8%) cases, followed by loss of MLH1 and MSH2 in 2(3.7%) cases, 1 case (1.9%) with loss of MSH6 and PMS2, and another 1 case with concurrent loss of MSH2 and MSH6 (1.9%). Loss of 3 MMR proteins expression (MLH1, MSH2 and MSH6) and all 4 MMR were seen in one case (1.9%) respectively. Abnormal MMR proteins were significantly associated with right-sided tumours ($P < 0.05$). About 18.5% (n = 10) demonstrated absent in MSH2, MSH6 and PMS2 proteins expression in isolation or in combination with other MMR proteins, which often predicts a germline mutation, consistent with diagnosis of HNPCC.

Conclusion: In conclusion, the general trend of CRC with abnormal MMR proteins expression in Malay patients is very much similar to the established study done on HNPCC but with a different frequency of MMR proteins expression compared to the reported data.

Keywords: *hereditary nonpolyposis colorectal neoplasms, human MLH1 protein, immunohistochemistry, paraffin embedding, staining and labeling*

Tracking the White Matter Disruption in Moderate Traumatic Brain Injury Patients Admitted to Hospital Universiti Sains Malaysia Using Diffusion Magnetic Resonance Imaging

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Abstract

Introduction: Traumatic brain injury (TBI) is often accompanied with diffuse axonal injury resulting in, among others, impairment in cognitive function. CT scan and conventional magnetic resonance imaging (MRI), while able to pinpoint the focal pathology in the brain, are incapable of characterising the white matter connections.

Objectives: In this study, we compared the structural white matter connectivity in the brains of healthy and moderate TBI patients using diffusion magnetic resonance imaging (dMRI).

Methods: This study included 8 moderate TBI patients and 10 healthy controls matched by age and years of education. CT scan of the brain was performed immediately following injury. Healthy controls and moderate TBI patients underwent dMRI scanning, the latter within 10 weeks of injury. Group comparison of fractional anisotropy (FA) values between controls and patients was performed using Tract-Based Spatial Statistics (TBSS).

Results: Results of the voxel-based analysis of FA maps revealed significantly lower anisotropy in major white matter tracts, including corona radiata, corpus callosum, external capsule, superior fronto-occipital fasciculus as well as optic radiation in the moderate TBI group compared to controls. The lower anisotropy was more evident in the left hemisphere of the brain, accurately reflecting the pathology sustained by the patients, which was mainly on the left hemisphere.

Conclusion: In conclusion, moderate TBI patients display lower FA values reflecting disruption in white matter integrity in specific regions on the side of trauma.

Keywords: *traumatic brain injuries, white matter, magnetic resonance imaging, diffusion magnetic resonance imaging, anisotropy*

Candida parapsilosis Catheter-Related Bloodstream Infection and Associated Factors

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Abstract

Objectives: Catheter-related bloodstream infection (CRBSI) is important healthcare-associated infection caused by different nosocomial pathogens. *Candida parapsilosis* has emerged as a crucial causative agent for CRBSI in the last two decades. Many factors have been associated with the development of CRBSI including demography, prematurity, comorbidities (diabetes mellitus, hypertension, heart diseases, neuropathy, respiratory diseases, renal dysfunction, hematological and solid organ malignancies and intestinal dysfunction), intensive care unit (ICU) admission, mechanical ventilation (MV), total parenteral nutrition (TPN), prior antibiotic and/or anti-fungal therapy, neutropenia, prior surgery, immunosuppressant, and type, site, number and duration of catheters. This study aims to determine *C. parapsilosis* CRBSI associated factors.

Methods: A retrospective study performed in 700-bedded tertiary-care hospital in North-eastern Malaysia. All in-patients with *C. parapsilosis* positive blood cultures from January 2006 to December 2018 were included and their medical records were reviewed using a standardised checklist. Out of 208 candidemia episodes, 177 has at least one catheter during admission, 31 cases have not been catheterised and were excluded. Among the 177 cases, 30 CRBSI cases were compared to 147 non-CRBSI (81 BSI, 66

catheter colonisers). The significance of different associated factors was calculated using multivariate analysis.

Results: Multivariate analysis of potentially associated factors shows that ICU admission was significantly negatively associated with CRBSI than non-CRBSI (OR, 0.242; 95% CI (0.080–0.734); P = 0.012), and TPN was significantly positively associated with CRBSI than non-CRBSI (OR, 3.079; 95%CI (1.125–8.429); P = 0.029), while other associated factors were not significant.

Conclusion: Patients admitted in ICU were less likely to develop *C. parapsilosis* CRBSI while patients receiving TPN is more likely to have *C. parapsilosis* CRBSI when compared to non-CRBSI group.

The Knowledge, Attitude and Practice of Infant Allergy Prevention Among Breastfeeding Peer Counselor in Pahang

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Abstract

Introduction: It is estimated that 30% to 40% of children in Malaysia have allergies that also involved breastfed infants. Maternal diet during pregnancy and breastfeeding was found to be one of the factors that may lead to allergy reaction in infants. The increasing trends of allergy among infants lead to the question whether mothers have a sufficient knowledge. One of the sources of information is via breastfeeding peer counselor.

Objective: This study aimed to identify knowledge, attitude and practice (KAP) of breastfeeding, maternal diet and infant allergy prevention among breastfeeding peer counselor (BPC) in Pahang.

Methods: This is a cross-sectional questionnaire study carried out among 67 BPC with mean age 40.94 ± 8.87 that live in Pahang. The convenient sampling method was used with the inclusion criteria will be among Kumpulan Sokongan Penyusuan Susu Ibu Pahang (KUSSIP). All the data was analysed using SPSS Version 12.0.

Results: In total, 82.1% of participants had moderate knowledge, 67.2% had good attitude and 80.6% had good practice towards breastfeeding, maternal diet and infant allergy. The knowledge of BPC showed significant positive correlations with attitude score (r = 0.659, P = 0.001), knowledge and practice (r = 0.480, P = 0.001) and attitude of BPC towards practice score (r = 0.643, P = 0.001).

Conclusion: This study reveals that majority of the BPC had moderate level of knowledge towards breastfeeding, maternal diet and infant allergy. An improvement of knowledge on this issue is highly recommended as they will be the centre of information for mothers to prevent allergy among breastfed infants through knowledgeable BPC.

Braf and Mismatch Repair Proteins Expression by Immunohistochemistry in Sporadic Young Colorectal Carcinoma in Kelantan Population

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Abstract

Objectives: The study aimed to determine the expression of mismatch repair proteins (MMR) and positive expression of BRAF proteins in early onset sporadic colorectal cancer, and their association with clinicopathological features.

Methods: Early onset sporadic colorectal patients over 11 years old in Kelantan who do not fulfilled the revised Bethesda criteria were included. Formalin-fixed paraffin embedded tissue blocks of early onset sporadic colorectal cancer were stained with antibodies for MMR (MLH1, MSH2, MSH6, PMS2) and BRAF protein by immunohistochemistry method. Clinic pathological features were reviewed from medical records.

Results: Thirty-one cases were encountered in this study with mean (SD) age of 31 (5.88) years old. All of them are Malay. Two third of the cases were female (61.3%). Majority of them presented with abdominal pain (41.9%) and 71.0% had tumour located on the right side of the colon with 83.9% were moderately differentiated adenocarcinoma. Majority of cases presented at advanced stage (Stage IV) (54.8%). Twenty cases were microsatellite stable (64.5%), nine cases were MSI-high (29%) and two cases were MSI-low (6.2%). BRAF mutation was seen in 83.9% of cases. Only histology subtypes revealed significant association with BRAF mutation (P-value = 0.015).

Conclusion: Majority of early-onset sporadic colorectal cancer presented with abdominal pain and in advanced stage of cancer. Most of them are microsatellite stable and have BRAF mutation. This finding should shed light on further research on this entity.

Keywords: *human BRAF protein, proto-oncogene proteins B-raf, immunohistochemistry, DNA mismatch repair, colorectal neoplasms*

Evaluation the Role of Anti-Oxidant Enzyme in HbE/BETA-Thalassemia Patients

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Abstract

Objectives: Free α-globin and increased iron overload from regular blood transfusion in HbE/Beta-Thalassemia patients generate reactive oxygen species (ROS) that damage cellular proteins, lipid and nucleic acid. Hence, this study aims to evaluate the superoxide dismutase activity in HbE/Beta-Thalassemia patients.

Methods: Thirty-four HbE/Beta-Thalassemia patients were recruited in this study between 2018 and 2019. An amount of 3 mL blood sample was withdrawn. Plasma was separated followed by quantitative colorimetric test by immunoassay method to determine the superoxide activity.

Results & Conclusion: The activity of superoxide dismutase was compared between HbE/Beta-Thalassemia patients and normal group. Superoxide dismutases (SODs) constitute a very important anti-oxidant defense against oxidative stress in the body. Increased activity of this antioxidant enzyme was noted in HbE/Beta-Thalassemia group indicating that this enzyme served as a good therapeutic agent protecting erythroid cell death against reactive oxygen species. Increased superoxide dismutase activity in HbE/Beta-Thalassemia patients provided protection against the reactive oxygen species (ROS). Further ongoing study will reveal the mechanism of underlying ineffective erythropoiesis in HbE/Beta-Thalassemia patients.

Keywords: *reactive oxygen species, superoxides, beta-thalassemia, oxidative stress, immunoassay*

Redundant Serum Creatinine Test Request in Chemical Pathology Laboratory Hospital Universiti Sains Malaysia—A Pilot Study

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Abstract

Objectives: Creatinine is often ordered as a set of test panel known as renal function test. Its clinical utility is undeniably crucial, however, when ordered not accordingly, it increases health care cost. As a form of inappropriate test request, redundant test is a potential source. This study aims to determine the proportion of redundant serum creatinine request from January 2018 to December 2018 and estimate the cost contributed by the redundancy.

Methods: This was a cross-sectional study involving adult patients in Hospital Universiti Sains Malaysia from January to December 2018. Data was obtained from the laboratory information system (LIS) and redundant serum creatinine request is defined as two normal consecutive tests sent within 26 h apart. Analysis was done using SPSS version 24. Cost estimation was made using total cost per tests.

Results: A total of 6,027 serum creatinine were repeated. Out of this, 1786 (29.6%) were redundant. The

highest proportion of redundancy came from critical wards 905 (50.7%). Of the total redundancy, the cost contributed was RM23,235.86 from RM78,411.27 of the total repeated serum creatinine.

Conclusion: Redundant serum creatinine alone was 29.6% amounting up to RM23,235.86, mostly contributed by critical wards. As renal function test consists of seven other analytes, redundancy of any of them is possible when ordering the whole test panel is made routine. This study, however, needs further data elaboration in which diagnosis should be sought to determine the clinical appropriateness of the repeated tests.

Keywords: creatinine, cross-sectional studies, clinical laboratory information systems, health care costs, hospitals

60/60 Signs: Asserting the Pulmonary Embolism

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Abstract

Introduction: This case illustrates diagnosis of pulmonary embolism (PE) by using 60/60 sign of doppler transthoracic echocardiography (TTE).

Case Report: A 33-year-old lady presented with a month history of bilateral leg swelling associated with exertional dyspnea and intermittent palpitation. Physical examination revealed HR of 118 bpm, BP of 123/87 and SPO2 of 97% under 3 L/min nasal cannula. She was noted to have distended jugular neck vein and non-tender bilateral lower limb pitting edema. Bedside TTE demonstrates dilated right ventricle (RV), distended inferior vena cava (IVC) diameter, D-shaped left ventricle (LV) and presence of McConnell sign. She had measured right ventricular systolic pressure (RVSP) of 56 mmHg and pulmonary acceleration time (PAT) of 47 ms. CT pulmonary angiography (CTPA) done confirming presence of embolus over left basilar pulmonary artery.

Discussion: 60/60 sign refers to disturbance of RV ejection pattern results in elevation of RVSP less than 60 mmHg and reduction of PAT less than 60 ms. Presence of other RV pressure overload features (basal RV diastolic dimension of > 30 mm or RV:LV > 1, right sided cardiac thrombus, interventricular septum systolic flattening and PAT < 90ms or tricuspid regurgitation pressure gradient > 30 mmHg in absence of RV hypertrophy) yields poor specificity. Whereas depressed contractility of RV free wall sparing its apex (McConnell sign) and 60/60 sign were

reported with significant specificity. Combination of these findings should raise level of suspicion of PE.

Conclusion: As diagnosis of PE is not always straightforward based on clinical signs alone, bedside echocardiography served as invaluable tool when diagnosis of PE is in doubt.

Keywords: pulmonary embolism, dyspnea, pulmonary artery, doppler echocardiography, thrombosis

The Prevalence, Type and Subsequent Evolution of Chronic Myeloid Leukemia with Variant Ph Chromosome Translocation

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Abstract

Objectives: Five to 10 percent of Philadelphia (Ph) chromosome positive chronic myeloid leukemia (CML) patients have variant translocations involving chromosomes other than 9 and 22. Studies reported contradictory outcome regarding prognosis of CML patients with variant Ph (vPh) versus classical Ph (cPh). Our objective was to investigate the prevalence cytogenetic, molecular characterisation and outcome of CML patients with variant translocation treated with imatinib mesylate.

Methods: A total of 43 Ph or *BCR-ABL* positive CML patients undergoing IM treatment for minimum period of 12 months were included. All patients had the *BCR-ABL* rearrangement confirmed by conventional cytogenetic/ FISH and/ or RT-PCR. Patients were followed up for a median follow up time of 182 months. Kaplan-Meier method was used to analyse overall survival (OS).

Results: Out of 43 CML patients (age range 18 to 76 years), five patients (11.6%) showed three-way

variant Ph chromosome translocation with involvement of chromosomes 22(2), 3(1), 21(1) and 5(1). The variant Ph karyotype patterns were 46,XX,t(9;21;22)(q34;q13;q11),46,XX,t(3;9;22)(p22;q34;q11),46,XY,t(9;22;22)(q34; q10;q11),46,XY,t(9;21;22)(q34;q22;q11) and 46,XX, der (22)t(5;9;22)(q11;q34;q11). Rates of complete cytogenetic response was not significantly different between vPh and cPh (40.0%, versus 55.3%, *P* = 0.127). However, the overall survival of CML patients with vPh and cPh translocation were significantly different. (Median 61.00 months versus 182.00 months, *P* = 0.025).

Conclusion: CML patients with variant translocations involving Ph chromosome are associated with a higher degree of genomic instability and a more aggressive form of CML thus conferring an unfavourable clinical outcome

Keywords: *chronic myeloid leukemia, Philadelphia, genomic instability, imatinib mesylate, BCR-ABL positive*

Genomic Abnormalities and Prognosis in Multiple Myeloma—The Experience at Hospital Universiti Sains Malaysia

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Abstract

Introduction: Multiple myeloma (MM) is a clinically heterogeneous disease with considerable variation in rates of response to treatment and overall survival (OS). Much of the clinical heterogeneity of MM is thought to arise from multiple genomic events that results in tumour development and progression. The combination of serum β2-microglobulin and albumin levels which defined as international staging system (ISS) is highly prognostic in MM. However, ISS does not include recurrent genomic abnormalities present in myeloma cells that also have a strong prognostic power.

Objectives: To investigate the genomic background of MM clones in a routine diagnostic setting in Hospital Universiti Sains Malaysia (HUSM), identify subgroups in ISS staging and stratify patients to evaluate the impact of this stratification on the disease outcome.

Methods: Bone marrow samples of each newly diagnosed MM patients were collected at diagnosis and subjected to cytogenetic and interphase fluorescence in situ hybridisation (iFISH) analyses using standard procedures.

Results: Clonal abnormalities were identified in 57.14% of analysis by karyotyping and 71.43% by iFISH. Cytogenetic analysis showed normal diploid, pseudodiploid, hypodiploid and hyperdiploid karyotypes, whereas iFISH analysis could detect various IGH translocations involving 14q32 region, del(13q14), del(17p13) etc. Patients with del(13q14) and del(17p13) which harbours the tumour suppressor genes RB1 and p53, respectively, were associated with decreased OS whereas patients with hyperdiploid karyotypes were associated with increased OS.

Conclusion: Karyotyping and iFISH are valuable assets in detecting prognostically relevant genomic abnormalities. The combination of karyotype, iFISH and ISS staging might help define prognostically relevant new subgroups in MM.

Keywords: *multiple myeloma, fluorescence in situ hybridisation, prognosis, karyotype, genetic translocation*

Evaluation of Current Bacteriological Profile and Antibiotic Sensitivity Pattern in Chronic Suppurative Otitis Media

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Abstract

Objectives: The study was carried out to evaluate the current bacteriological profile of CSOM and their anti-microbial sensitivity and resistance pattern to the locally available antibiotics.

Methods: A total of 91 ear swabs were obtained from patients clinically diagnosed with active CSOM. These swabs were cultured for microbial identification. Antibiotic susceptibility testing of the bacterial isolates was performed using Modified Kirby-Bauer's disc diffusion method.

Results: Microbial growth was seen in 76 (83.5%) samples while 9 (9.9%) were mixed and 6 (6.6%) of the samples had no growth. Out of total 76 samples with microbial growth, 63 (69.2%) samples were monomicrobial whereas 13 (14.3%) samples showed polymicrobial growth. The most common bacteria isolated was *Pseudomonas aeruginosa* (31.9%) followed by *Staphylococcus aureus* (16.5%) and *Klebsiella* sp (4.4%). The most effective antibiotics against *Pseudomonas aeruginosa* were ceftazidime, meropenem and piperacillin-tazobactam. *Staphylococcus aureus* showed maximum sensitivity to rifampin, cefoxitin and fusidic acid.

Conclusion: The bacteriological profile of chronic suppurative otitis media has not changed significantly but their antibiotic sensitivity and resistance pattern showed gradual decline. Knowledge of the causative microorganisms and its susceptibility pattern would contribute to a rational antibiotic use for an effective treatment of CSOM.

Keywords: suppurative otitis media, anti-bacterial agents, Pseudomonas aeruginosa, Staphylococcus aureus, Klebsiella

Azathioprine Use in Inflammatory Bowel Disease in Hospital Universiti Sains Malaysia: Response, Safety and Monitoring of Treatment

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Abstract

Objectives: Azathioprine is a widely used immunomodulator; patients of Asian descent have a higher risk of myelo- and hepato-toxicity if given doses at recommended levels. This study aimed to determine the safety profile of azathioprine and to evaluate adherence to proper monitoring among patients with inflammatory bowel disease (IBD) initiating azathioprine therapy at Hospital Universiti Sains Malaysia (HUSM).

Methods: A cross-sectional case record review of patients with a diagnosis of IBD and initiating azathioprine use between January 2013 and January 2018 was performed.

Eligible subjects' clinical data were obtained; prescription and laboratory data were accessed online. The rate of disease remission and dose required to achieve this, as well as possible factors that predict remission were recorded.

Results: A total of 56 subjects were included. Mean age was 43.59 years (SD 12.21 years). Thirty-two (57.1%) of subjects were female. Our cases were predominantly ulcerative colitis (82.1%, *n* = 46) compared to Crohn disease (17.9%, *n* = 10). Myelotoxicity occurred in 3 (5.4%) of cases, while none had hepatotoxicity. Almost all (96.4%, *n* = 54) had adequate monitoring. Remission rate of IBD on azathioprine at 6 months and 12 months were 60.7% and 66.1%, respectively. Dose of maintenance azathioprine prescribed was between 1.4 mg/kg–1.9 mg/kg (mean 1.84 mg/kg). Maintenance dose (mg/kg) was a factor with significant association with remission rate at 12 months (OR 0.011 [0.001,0.17], $P < 0.005$).

Conclusion: This study confirms azathioprine as effective to induce and maintain remission in our IBD patients, with a good safety profile. Our patients are properly monitored, with remission rate comparable with previous studies despite adapting a lower dosage than the internationally recommended 2 mg/kg–3 mg/kg.

Keywords: inflammatory bowel diseases, ulcerative colitis, Crohn disease, cross-sectional studies, Malaysia

Platelet Transfusions Induce Rhesus Alloimmunisation—A Case Report

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Abstract

Introduction: Platelet concentrates are formed from whole donor or by platelet apheresis donation. Platelet concentrated obtained from whole blood is prepared by double centrifugation. In normal circumstances, transfused platelet is ABO blood group compatible and rhesus positive.

Case Report: A 56-year-old Malay gentleman with underlying myelodysplastic syndrome requiring regular platelet transfusions.

Results: In his previous admissions, he had received more than 90 units of platelet concentrates but none from pack red blood cells. He was not known to be given any rhesus immunoglobulin. Group screen hold revealed that patient is blood group B, rhesus negative and antibody screening showed positive for all cell panels. Antibody identification revealed anti-D antibody. His red blood cell

phenotype is r'r(dCe/dce). This case illustrates that platelet transfusion has induced RhD alloimmunisation.

Conclusion: In conclusion, it is recommended that blood bank should be more vigilant in the management of platelet transfusion with respect to Rhesus compatibility and level of erythrocytes contamination in platelet concentrates.

Keywords: platelet transfusion, blood platelets, plateletpheresis, RHO(D) antibody, ABO blood-group system

Association of Grafts and Patient Characteristics with Post-Cryopreserved CD34+ Cells Viability in Autologous Stem Cells Harvest Products at Hospital Universiti Sains Malaysia

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Abstract

Objectives: The aim of this study is to evaluate association of grafts and patient characteristics with post cryopreserved CD34+ cells viability.

Methods: A retrospective study was conducted in Hospital Universiti Sains Malaysia over 10 years from 2008 until 2018 recruiting 132 autologous peripheral blood stem cells recipients. The viability of CD34+ cells were quantified using single platform flow cytometry and viability dye, 7-amino actinomycin D (7-ADD), at the time of autologous stem cells collection and day 5 post-cryopreserved. Whereas, the CD34+ cells dose and concentration were analysed with flow cytometric analysis using Fluorescein isothiocyanate (FITC) tagged anti-CD34 monoclonal antibody. Both the platelet counts and total nucleated cells were derived from total white blood cells count whereby these parameters were initially evaluated using haematology analyser, Sysmex (Kobe, Japan). The data on patient characteristics which include non-chemotherapy drugs consumed and presence of any infection were retrieved from the transplant registry and medical records.

Results: Evaluation on the graft characteristics showed mean of platelet count of 816.84 ± 701.88 x10^9/l, total nucleated cells $38.7 \pm 24.39 \times 10^3$ cells, CD34+ cells concentration 2386.9 ± 3468.9 mL/kg and CD34+ dose $7.05 \pm 7.25 \times 10^6$ cells/kg, respectively. The graft characteristics that showed significant association includes pre-cryopreserved CD34+ cells viability ($P < 0.001$), platelet count ($P < 0.001$), total nucleated cells ($P = 0.001$) and CD34+ cells dose ($P < 0.001$). Whereas, patient characteristics that showed significant association with post cryopreserved CD34+ cells viability were oral hypoglycemic agents ($P = 0.001$) and antiplatelet ($P = 0.014$) as well as presence of infection ($P = 0.006$) after adjusted for other variables.

Conclusion: The grafts and patient characteristics do play a role in predicting the post cryopreserved CD34+ cells viability eventually affecting the engraftment outcome.

Keywords: peripheral blood stem cells, flow cytometry, retrospective studies, dactinomycin, cryopreservation

Diffusion Magnetic Resonance Imaging Predicts the Development of Cerebral Palsy in Preterm Neonates with White Matter Abnormalities

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Abstract

Objectives: Cerebral palsy (CP) affects mainly preterm neonates with white matter (WM) abnormalities and commonly manifest later in life. Diffusion magnetic resonance imaging (dMRI) is used to assess the regional microstructural changes of WM. Our aim is to review longitudinal studies utilising dMRI in predicting the development of CP in preterm neonates with WM abnormalities.

Methods: A literature search was performed in PubMed using keywords: white matter, diffusion MRI, cerebral palsy and neonates. This search, refined for articles in human studies over the past five years, retrieved twelve results. We only included longitudinal quantitative study on WM among neonates and excluded trauma or infection. Out of twelve articles, four were relevant and extracted for this review. We compared the fractional anisotropy (FA) values between case and control as one of the diffusion metrics to reflect WM integrity.

Results: It was found that FA values were significantly lower in the genu and splenium of corpus callosum, internal

capsule, centrum ovale and posterior thalamic radiation in one study. The other three studies reported significantly lower FA values in internal capsule, superior cerebellar peduncles and corticospinal tracts respectively. Majority of neonates that had WM abnormalities with reduction of FA developed CP while those that did not have WM abnormalities did not develop CP.

Conclusion: We conclude that dMRI is a valid tool to predict development of CP in infants born preterm.

Keywords: newborn infant, white matter, diffusion magnetic resonance imaging, anisotropy, cerebral palsy

Quality Assessment of Plateletpheresis Product Stored in Platelet Additive Solution and Without Platelet Additive Solution

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Abstract

Objectives: The aim of this study was to compare the quality and parameters of plateletpheresis product of single donor platelets (SDPs) stored in PAS and non-PAS over seven days of storage period.

Methods: Single donor platelets (SDPs) were prepared by plateletpheresis procedure using Amicus cell separator version 3.2 (Fresenius Kabi, Germany). They were stored in two conditions, which is one in PAS InterSol (Fenwal, Inc) fortified with plasma in a ratio of 65: 35 (PAS: plasma) and another is in non-PAS that contains only native plasma. They were stored at 22 °C–24 °C with continuous agitation. The study parameters included platelet counts, platelet aggregation test by using only Ristocetin agonist and pH, taken on day 1 and day 7 of storage period. A statistical analysis of the data was done by using repeated measure Anova test.

Results: Platelet counts and platelet aggregation test using Ristocetin showed no significant difference between PAS and non-PAS apheresis platelets. pH was maintained over storage time within the required range of > 6.4 for both groups.

Conclusion: Platelets stored in both PAS and non-PAS solution demonstrated similar findings with regards to platelet counts, platelet aggregation and pH. The platelet count and platelet aggregation activity using Ristocetin agonist stored in both mediums were not different. Thus, the platelet stored in PAS is expected equally effective for platelet transfusion based on these parameters.

Keywords: plateletpheresis, blood platelets, platelet transfusion, platelet aggregation, platelet function tests

Schizophrenia-Like Psychosis Caused by Ovarian Teratoma

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Abstract

Introduction: Cases of schizophrenia-like psychosis associated with ovarian tumours have been reported in current literature. The proposed mechanism is through excessive glutamate release determined by NMDAR (N-methyl-d-aspartate receptor) antibodies.

Here we report a case of 26-year-old lady, suffering from a psychotic disorder concomitant with a giant ovarian teratoma. The patient with no prior history of psychotic illness was brought to the Emergency Department in April 2019 with an acute onset of psychosis. She was observed to have hallucinatory as well as disorganised behaviour and was neglecting her personal hygiene. Prior to this presentation she has been referred to the gynaecology team for ovarian cyst. However, she defaulted the follow up.

Case Report: Blood investigations including CRP (C-reactive protein) were normal. CT (computed tomography) brain reveals no abnormalities. A differential diagnosis of Brief Psychotic Disorder was made and she was started on anti-psychotic. However, there was no improvement of the symptoms. Two weeks later she presented again with an acute onset of abdominal pain. She underwent a laparotomy and was found to have giant twisted mature cystic teratoma, measuring 170 mm × 135 mm × 90 mm and weighing 1,132 g with gangrenous fallopian tube. She was continued with anti-psychotic regime upon discharge. At subsequent psychiatric follow ups her

symptoms gradually improve and at eight weeks post-operation patient is back to her pre-morbid state.

Conclusion: In view of recent literature findings, we speculate that the patient's psychotic symptoms could have been part of a paraneoplastic syndrome associated with anti-NMDARs, triggered by the ovarian tumour.

Keywords: N-methyl-D-aspartate receptors, C-reactive protein, ovarian teratoma, psychotic disorders, paraneoplastic syndromes

Abdominal Free Fluid in Woman with Huge Ovarian Cyst: Do Not Miss Out Abdominal Ectopic Pregnancy

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Abstract

Objectives: To recognise ruptured abdominal ectopic pregnancy in a pregnant woman with free fluid using bedside abdominal ultrasonography.

Methods: A 28-year-old woman with parity two was presented with generalised abdominal pain and was only at day 19 of her menstrual period. She had regular menses monthly and was not on any contraception. Nevertheless, she did not complaint of per vagina bleed. During examination, her suprapubic region was tender and presence of abdominal guarding. She was pale and initial hemoglobin was 6 g/dL. Bedside abdominal ultrasound revealed free fluid at Morrison Pouch and Pouch of Douglas with huge left ovarian cyst measuring 11 cm × 7 cm with empty uterus. Urine pregnancy test was positive. She was suspected to have ruptured ectopic pregnancy with differential diagnosis of twisted ovarian cyst. Urgent exploratory laparotomy was done by gynaecology team.

Results: Bedside ultrasound showed free fluid intra-abdomen with huge left ovarian cyst and an empty uterus. Intra-operative findings revealed omental pregnancy with left ovarian cyst. She underwent emergency laparotomy, left cystectomy and excision of omental ectopic pregnancy. The histopathological reported as an omental ectopic pregnancy

with left haemorrhagic corpus luteal cyst. Subsequently, she was discharged well.

Conclusion: Rupture ectopic pregnancy should be highly suspected even in early days of missed menses with ultrasound finding of intra-abdominal free fluid. Concurrent presence of ovarian cyst may mislead as rupture ovarian cyst.

Keywords: pregnancy, ectopic pregnancy, ovarian cysts, abdominal pain, ultrasonography

Head and Neck Radiation-Induced Sarcoma: Report of Two Cases

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Abstract

Introduction: The incidence of radiation-induced sarcoma (RIS) in head and neck region is increasing in trend nowadays. A few cases have been reported so far, however, the exact aetiology of RIS is still unknown. We report two cases of RIS which the primary malignancy was basal cell carcinoma of the cheek and nasopharyngeal carcinoma.

Case Reports: Two patients aged 24 years and 56 years who were previously diagnosed with nasopharyngeal carcinoma and basal cell carcinoma of the cheek, respectively. They presented to us with right neck swelling and cheek swelling for an average of 4 months duration. These patients had received a total of 70Gy and 65Gy radiotherapy 13 years and 6 years back, respectively. The histopathology reports revealed a spindle cell sarcoma and a high-grade sarcoma, respectively. Both cases were inoperable because of advanced disease at presentation and succumbed to their illness within six months after being diagnosed.

Conclusion: RIS is an aggressive tumour with poor survival rate as most of the patients presented late. Radical surgical resection with clear margin is still the gold standard of treatment. Although RIS is not preventable, but early detection can increase the survival rate. The management of previously radiated head and neck primary is undeniable challenging.

Keywords: nasopharyngeal carcinoma, sarcoma, nasopharyngeal neoplasms, basal cell carcinoma, cheek

Clinical Characteristics and Outcomes of Paediatric Orbital Cellulitis: A Five-Year Review

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Abstract

Objectives: Limited data is available from Asian countries regarding paediatric orbital cellulitis. We aim to describe demographic data, clinical presentation, predisposing factors, identified microorganisms, choice of antibiotics and management in children with orbital cellulitis treated in a tertiary care centre in Malaysia.

Methods: A retrospective review was performed on children with orbital cellulitis ages 17 years and below who were admitted to the hospital in between 2013 and 2017.

Results: A total of 14 paediatric patients fulfilling the diagnostic criteria for orbital cellulitis were included. The mean age was 6.5 ± 1.2 years. Boys (71.4%) were more likely to have orbital cellulitis than girls (28.6%). Both eyes involvement was observed in 14.3%. Sinusitis (28.6%) and upper respiratory tract infection (21.5%) was the leading pathogen. Longer duration of hospitalisation was observed in those infected with methicillin-resistant *Staphylococcus aureus* and *Bukholderia pseudomallei*. Of the sample, 71.4% were treated with a combination of two or three antibiotics. In this series, 42.9% had surgical interventions.

Conclusion: Young boys are more commonly affected by orbital cellulitis than young girls. *Staphylococcus aureus* is the most common isolated microorganism. Methicillin-resistant *Staphylococcus aureus* and *Bukholderia pseudomallei* cause severe infection. Sinusitis and upper respiratory tract infection are the most common predisposing factors. A majority of the children improved with medical treatment alone. This study's data is in slight disagreement with other published reports on paediatric orbital cellulitis, especially from the Asian region.

Keywords: orbital cellulitis, anti-bacterial agents, retrospective studies, Staphylococcus aureus, demography

A Complex Scalp Resurfacing Utilising Integra® as Temporary Dressing in Aplastia Cutis Congenitalia: A Case Report

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Abstract

Introduction: Aplasia cutis congenita (ACC) is a rare malformation characterised by localised congenital absence of the skin. We report a challenging case of aplastia cutis congenitalia who received treatment in our centre.

Case Report: A 2-year-old child with bilateral vertex defect with encephalocele who underwent a series of surgical treatment since 1-month old. Unfortunely, he returned after two years with a chronic non-healing scalp wound associated with dural defect and cerebral spinal fluid (CSF) leakage. Part of the wound bed with dura defect was repaired using a small piece of transplanted fascia lata. We successfully managed the wound with mutiple application of dermal substitute (Integra®) dressing with negative pressure wound therapy (NPWT) and split-thickness skin graft (STSG).

Conclusion: Management of ACC with skull defect remains controversy. In this case, we applied simple technique of scalp wound coverage by utilising Integra® and STSG of the mature neodermis, using NPWT as our main dressing method. The outcome is excellent with the wound rapidly and completely healed. This generally new method is great for treating scalp ACC. It prevented unnecessary major operations, their complications and incurs minimal morbidity to the host donor site. Furthermore, it renders good cosmesis and functional outcome.

Keywords: scalp, negative-pressure wound therapy, encephalocele, fascia lata, ectodermal dysplasia

Tumour Mimicking Constrictive Band of Duodenojejunal Junction

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Abstract

Introduction: Duodenojejunal (DJ) junction tumour is a rare entity of duodenal tumour. The ability to acquire the diagnosis and treatment via resection is difficult for surgeons in view of its anatomical location.

Case Report: We reported a case of a middle-aged man who presented with upper gastrointestinal obstruction. The computed tomography (CT) scan revealed constrictive band at DJ junction as the possible aetiology. Exploratory laparotomy was performed in view of non-resolving symptoms.

Conclusion: Intra-operative finding showed malignant constricting DJ tumour. Tumour resection was performed followed by duodenojejunal anastomosis. The histopathological finding was adenocarcinoma of duodenum with clear resection margin. The anatomical location of DJ junction within retroperitoneal space makes the presentation to be non-specific in the beginning until the complication of obstruction happens. It is almost impossible to gain tissue diagnosis pre-operatively as the area is non-reachable via upper endoscopy. Surgical resection is ultimately challenging as it is surrounded by major structures such as superior and inferior mesenteric vessels, portal vein and the pancreas. The controversy remains on the extension of resection to ensure clear oncological margin for better prognosis.

Keywords: retroperitoneal space, laparotomy, duodenal neoplasms, margins of excision, prognosis

Abstract

Introduction: Benign paroxysmal positional vertigo (BPPV) is a common peripheral hypofunction reported in dizzy clinics and is mostly dependant on positional manoeuvres for diagnosis and intervention. Although video head impulse test (vHIT) is not warranted in BPPV cases however due to the subjectivity of patients' reports, it is sometimes performed on patients to exclude potential vestibular ocular reflex (VOR) deficits.

Objectives: Observe differentiation patterns of VOR gain and possible corrective eye movements in patients with BPPV using vHIT.

Methods: Two male and five female participants with BPPV were tested using vHIT. Three patients out of the seven who were relieved from post Canalith repositioning procedure (CRP) were tested again with vHIT. Ten responses for each semicircular canal stimulation were recorded for every participant by making small unpredictable head movements.

Results: VOR gain for all canal stimulations were found to be within the normal range. All participants showed consistent pre-treatment corrective saccadic eye movements with gain between 0.12 to 1.35 and latency of onset between 80 ms to 220 ms after vHIT was initiated. All saccades were recorded in lateral canals only despite patients presenting with anterior or posterior canal BPPV. Post-treatment vHIT findings showed that the saccades have diminished for two participants while a participant showed reduced saccades.

Conclusion: Rapid head thrusts could trigger VOR adjustments in patients with dislodged otoconia such in BPPV cases. Further investigation is necessary to validate the potential use of vHIT as a tool to supplement findings via manoeuvres especially to check the effectiveness of CRP.

Keywords: head impulse test, vestibulo-ocular reflex, benign paroxysmal positional vertigo, saccades, semicircular canals

Preliminary Post Findings in BPPV Patients Presenting with Normal Vestibulo-Ocular Reflex Gain and Observable Saccades Using Video Head Impulse Test

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Management Pitfalls in Complicated Head and Neck Lymphomas

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Abstract

Introduction: Lymphoma of head and neck region often presents with similar symptoms as an inflammatory pathology or other common malignancy such as squamous cell carcinoma. Clinical presentation of lymphomatous lymph nodes may pose a diagnostic challenge especially in suspected tuberculous node patients.

Case Report: A 56-year-old male with underlying hepatitis B, presented with two months history of right neck swelling who was initially treated for tuberculosis lymphadenitis based on suspicious cytology and tuberculosis contact. He did not respond to the anti-tuberculosis medication and later confirmed by histopathology to have diffuse large B-cell lymphoma. He developed airway edema with escalating hepatorenal failure and sepsis leading to demise.

Conclusion: Accurate diagnosis of neck swelling should include a thorough consideration of history with consideration of risk factor such as immunocompromised state that may suggest a masquerading pathology like lymphoma. Careful assessment of cytology, tissue biopsy and imaging must be stressed before treatment initiation to avoid adverse response.

Keywords: lymph node tuberculosis, lymphoma, biopsy, B-cell lymphoma, lymphadenitis

Knowledge and Practices of Osteoporosis Preventive Measures Among Women in a Tertiary Teaching Hospital

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Abstract

Objectives: Osteoporotic fracture is a major public health problem in pre- and peri-menopausal period, associated with substantial morbidity, socio-economic burden and mortality. Poor knowledge and practice related to osteoporosis have been noted worldwide. In Malaysia, few studies have measured knowledge and practice of osteoporosis among women. This study aimed to determine the knowledge and practices of osteoporosis preventive measures among women in Hospital USM.

Methods: A cross-sectional study using a validated, self-administered questionnaire about knowledge and practices of osteoporosis measures was carried out among 185 hospitalised women in Hospital USM. A simple random sampling was used for recruitment of participants. The data were analysed using Chi-squared tests.

Results: Majority of the participants 67% belongs to 45–55 age group with mean age of 50.35 years. The findings indicate 40.5% had a good level of knowledge towards osteophorosis while 53.5% had a poor practice level.

Conclusion: Knowledge on osteoporosis and practices is still at a fair level, hence may affecting practices towards osteoporosis prevention. Time were spent on watching television. Therefore, public health strategies aiming at improving women's knowledge towards osteoporosis prevention and changing lifestyle practices should be developed in Malaysia.

Keywords: woman, osteoporotic fractures, cross-sectional studies, Malaysia, surveys and questionnaires

Aspiration Avoiding Tracheostomy in Neonatal Cystic Oral Lesion

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Abstract

Introduction: Oral cyst is uncommon in the neonatal period. Depending on the size and site of occurrence, the symptoms may vary. If it not diagnosed and managed expeditiously, these oral cysts may cause significant morbidity and mortality as its can be fatal.

Case Report: We report a successfully managed case of oral cyst in neonate that presented with huge tongue mass at birth with potential impending airway obstruction. She was referred for tracheostomy as intubation was impossible. We attempted needle aspirate and the airway successfully relieved without the need of tracheostomy.

Conclusion: Successful management of the presented cases emphasises the need of early diagnosis and prompt surgical intervention. We also emphasise the inclusion of aspiration as one of the modalities in treatment options for optimal management of neonatal oral cysts thus avoiding the need for invasive surgical procedure such as tracheostomy.

Keywords: cysts, newborn infant, tracheostomy, airway obstruction, intubation

A Case Report of Stahl Ear Correction Surgery

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Abstract

Introduction: Stahl ear is a rare congenital deformity of external ear auricle characterised by presence of abnormal third crus of anti-helix, broadened scapha and unfolded helical rim. This is due to the defect in embryogenesis of intrinsic auricular muscle during the third month. Correction of Stahl deformity is challenging due to its variations and the need to maintain good aesthetic outcome.

Case Report: We report our experience in Stahl ear correction surgery using cartilage cutting technique followed by placement of anatomical splint on the anterior surface of scaphoid fossa.

A 20-year-old male with right Stahl ear is presented. An incision made over the posterior auricular sulcus for exposure. Wedge excision of abnormal cartilage followed by placement of anatomical splint using portion of excised cartilage over the scapha to maintain the concavity. Flattened helical rim fold recreated using scoring method.

Results: Complete elimination of abnormal third crus, reduction of broadened scapha and recreation of helical rim fold in a single setting with an inconspicuous scar.

Conclusion: This technique successfully removed the third crus which results in an aesthetically pleasing ear.

Keywords: ear auricle, external ear, esthetics, cartilage, recreation

Patient Experience, Patient Satisfaction, Willingness to Recommend and Its Correlation

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Abstract

Introduction: The quality of health services can be evaluated through the feedback from the patient. Positive experience leads to have high satisfaction level and subsequently willing to recommend the institution to others.

Objectives: The study aims to assess the patient feedback through their experience, satisfaction level and willingness to recommend, and to determine its correlation.

Methods: A cross-sectional study was conducted in a teaching hospital using a Malay validated Hospital Consumer Assessment of Healthcare Provider and System (HCAHPS) questionnaire. The multistage sampling was applied. Thirteen wards represent medical, surgical and O&G based wards were selected. Systematic random sampling method was then applied for patient selection. Number of samples for each ward was calculated proportionately based on the average number of discharge patient monthly. The global rating item in HCAHPS was used to determine satisfaction level. Data was collected and analysed using SPSS version 22.0.

Result: A total of 547 patients were involved in this study with 61.6% female patient and 85.9% were young adult less than 60 years old. Only about one third had tertiary education. 57.6% of patients were satisfied with the services and 64.5% were willing to recommend the hospital to others. More than 60% of the patients had negative experience in all the six patient experience domains. There was a significant correlation between satisfaction level, willingness to recommend and all patient experience domain except environment of care domain.

Conclusion: It is important to ensure that positive patient experience is achieved while delivering healthcare service.

Keywords: cross-sectional studies, personal satisfaction, Malaysia, teaching hospitals, surveys and questionnaires

Triple Negative Breast Cancer-Prognostic Factors and Survival in a Single Treating Centre

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Abstract

Introduction: Triple negative breast cancer (TNBC) is defined by a lack of expression of estrogen, progesterone and human epidermal growth factor receptor 2 receptors. This type of breast cancer has a poor prognosis and tends to be more aggressive type.

Objectives: This study aimed to study the survival rate and prognostic factors in TNBC patients.

Methods: This retrospective study included patients diagnosed with TNBC between years 2008 and 2015. The collected data included patients' sociodemographic, histopathology and treatment details. The survival analysis was performed using the Kaplan-Meier method. The cox proportional hazard model was used in multivariate analysis to evaluate the prognostic factors of TNBC.

Results: A total of 291 patients with TNBC were included in this study. The median age at diagnosis was 53 years. Median tumor size at time of diagnosis was 4 cm. After a mean follow-up of 4.7 years (2 weeks–10.08 years), out of 291 TNBC patients, 106 (36.4%) were died. The 5-year overall survival was 64.7%. In multivariate analysis, after adjusting for sociodemographic, histopathology and other treatments, lymph node positive and no chemotherapy treatment were identified as significant independent prognostic factors for overall survival in patients with TNBC. The risk of death was 3.30 higher in patients not receiving chemotherapy (95% CI = 1.54–7.05) and 2.20 higher in patients with positive lymph nodes (95% CI = 1.04–4.68).

Conclusion: In this study, patients with lymph node positive and patients not receiving chemotherapy treatment were found to be independent prognostic factors for overall survival in TNBC patients.

Keywords: *triple negative breast neoplasms, ErbB-2 receptor, retrospective studies, survival analysis, prognosis*

Glue Gun Stick in Post-Corrective Nasal Vestibular Stenosis: Is That Possible?

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Abstract

Introduction: Post-traumatic nasal vestibular stenosis can be secondary to deformed architecture of either cartilage or tissue structure.

Case Report: It is challenging when dealing with scarring tissue as another insult to correct the abnormality may further predispose to excessive tissue scarring. Care after surgical repair of nasal stenosis with scarring tissue should be intense and meticulous to prevent the chance of restenosis.

Conclusion: This case report highlights the post-operative care to maintain patent functional vestibular opening using glue gun stick, which is used to dilate the nasal opening, thus preventing restenosis.

Keywords: *post-operative care, nose diseases, pathologic constriction, adhesives, cartilage*

The Sound of the Lonely Bullet

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Abstract

Objectives: Traditional teaching has taught us that transcranial ultrasound is used almost exclusively in neonates in order to visualise the brain and the cerebrospinal fluid flow. It is based on the understanding that sound wave from an ultrasound probe is place over the fontanelle whereby lack skull coverage, thus producing an image. This facilitates the sound waves to travel to and fro. Does that mean that this method cannot be used in adult? We are reporting a case whereby we have successfully used the ultrasound to confirm the presence of foreign body in the brain of a 5-year-old child. Can this be a breakthrough in point-of-care ultrasound (PoCUS)?

Methods: The child was placed lying supine. Linear ultrasound probe was placed over bilateral temporal of the child to obtain both transverse and vertical views.

Results: A 2.9 cm × 1.65 cm oval shaped hyperechoic foreign body with an acoustic shadow extending behind it was identified over the left temporal region suspecting a bullet. The findings were subsequently confirmed by Computed Tomography of the brain.

Conclusion: Despite limited acoustic window of transcranial ultrasound approach and attenuation of the ultrasound energy transmission through thickness and porosity of the bone around the acoustic window, ultrasound could still be an inexpensive and convenient tool to be used

during initial assessment to detect the intracranial retained foreign body.

Drug Induced Gingival Overgrowth Among Hypertensive Patients Attending Hospital Universiti Sains Malaysia: A Preliminary Data

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Abstract

Introduction: Gingival overgrowth (GO) is an abnormal growth of the gums that commonly associated with medications. Anti-hypertensive agent such as calcium channel blockers (CCB) is one of the drugs that is frequently reported to induce this unwanted effect which may affect patient's chewing function and appearance as well as difficulties in performing oral hygiene measures.

Objectives: To assess the occurrence and severity of drug-induced GO among hypertensive patients attending Hospital Universiti Sains Malaysia.

Methods: This is a cross-sectional study involving 22 patients taking anti-hypertensive agents for at least six months. They were examined for oral hygiene status and gingival appearance. The presence of GO was assessed by using the clinical index (CI) for drug-induced GO. Those who have other uncontrolled systemic diseases were excluded. Data were analysed using SPSS version 24.

Results: The median age and interquartile range (IQR) of patients was 57.50 (IQR 14). The minimum duration of them taking the medications was 1 year with the median of 10 years (IQR 5). On average, patients showed moderate oral hygiene status. Majority were taking CCB only (68.2%) by which 45.5% were on amlodipine. Among all, 13 (60%)

patients presented with GO and mostly (84.6%) in the mild form (CI grade 1). About 15% showed moderate to severe GO (CI grade 2 and 3).

Conclusion: This preliminary data indicates high occurrence of drug-induced gingival overgrowth among hypertensive patients and most drug used was amlodipine. Awareness and early detection of this unwanted condition may prevent further complications of GO.

Risks Factors and Microbial Profiles of Early Onset Neonatal Sepsis at a Tertiary Care Centre

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Abstract

Introduction: Early onset of neonatal sepsis (EOS) is defined as sepsis occurring in the first 3 days of life and is caused by pathogens transmitted vertically from mother to infant before or during delivery. Understanding the risk factors contributing to EOS is important in order to recognise the signs and symptoms of disease which can range from non-specific to multiorgan failure. Hence the aim of this study was to determine the risks factors and microbial profile of early onset neonatal sepsis.

Methods: A cross-sectional study was conducted in Hospital Universiti Sains Malaysia in Kelantan from January 2015 until August 2016. Clinical and microbiological investigations were retrieved from record of neonates with presumed neonatal sepsis.

Results: One hundred and thirty-five neonates with presumed sepsis and 25 healthy neonates were recruited in this study. Incidence of EOS was 11 per 1000 live birth. EOS were common in premature newborn (67.41%) and majority (94.8%) admitted with low APGAR score. Prolonged ruptured of membrane (> 18 h) and maternal fever were the top maternal risk factors. 18.52% of neonates confirmed positive by blood culture and out of it, a third died due to majority Gram-negative bacteria. The highest bacteria

isolates were coagulase negative Staphylococcus, followed by *K. pneumoniae* and Group B Streptococcus. *K. pneumoniae* was the commonest organism causing neonatal death.

Conclusion: Identification the foetal and maternal risk factors were useful indicators to predict EOS. EOS due to Gram negative bacteria were detrimental especially to the premature and low birthweight neonates. Concerted efforts between the management teams are required in order to implement appropriate treatment strategies as sepsis remains to be a serious danger to neonatal wellbeing.

Keywords: neonatal sepsis, cross-sectional studies, blood culture, perinatal death, risk factors

Anti-NMDA Receptor Encephalitis Presenting as an Acute Psychosis

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Abstract

Introduction: Autoimmune encephalitis has been reported to present with wide dimensions of neuropsychiatric symptoms. Patients with predominantly psychiatric presentations may mask the underlying pathology.

Case Report: Here we present a case of 19-year-old student with no known medical or psychiatry illness or family history of mental illness. She presented to the emergency department with attempts to harm herself which was preceded by depressive and psychotic symptoms, associated with hyperventilation episodes with twitching of hands and lips. Initial investigations including contrast enhanced computed tomography (CECT) of the brain showed unremarkable results. She was initially diagnosed as schizophreniform disorder and treated with antipsychotics and electroconvulsive therapy. However, her condition further deteriorated in the ward.

Results: Electroencephalogram (EEG) showed right hemispheric dysfunction indicating cortical dysfunction. Patient was treated as autoimmune encephalitis and immunosuppression with steroids and immunoglobulin were initiated. N-methyl-D-aspartate (NMDA) receptor antibody turned out positive while other connective tissue screenings were negative. Second EEG showed improvement of right hemispheric slowing, but presence of sharp and spike over left temporal region. Neuropsychological assessment showed severe intellectual, memory and executive impairment. While in the ward, patient showed improvement. Pelvic ultrasound was unremarkable. There was incidental finding of breast lump, which was treated as benign breast lesion. Patient was discharged well with low dose antipsychotics which subsequently stopped as she no longer has psychotic symptoms. Her cognition is improving during outpatient follow-ups.

Conclusion: Organic causes of psychosis should be suspected in patient who has no risk factors, atypical presentation and with poor response to adequate anti-psychotics.

Keywords: N-methyl-D-aspartate receptors, antipsychotic agents, psychotic disorders, encephalitis, electroencephalography

Prevalence of Diabetic Nephropathy and Its Associated Factors

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Abstract

Objectives: To determine the prevalence of diabetic nephropathy (DN) among type 2 diabetes mellitus (T2DM) in Pasir Mas district at five years of diagnosis. To determine associated factors of diabetic nephropathy among T2DM in Pasir Mas district at 5 years of diagnosis.

Methods: All newly diagnosed T2DM without nephropathy in 2013 whom attended health clinics in Pasir Mas district were being followed up for five years in this retrospective cohort study. From 349 patients, there were 289 patients remaining at the end of 2017. No sampling method was applied. Data were collected from patient's diabetic cards and factors associated with the development of diabetic nephropathy at 2017 were analysed using logistic regression

Results: The prevalence of DN in this study was 38%. There were two significant factors associated with DN found in our study which is, hypertension (OR = 2.39, 95% CI = 1.28,4.45); *P* = 0.006) and HbA1c (OR = 1.15; CI = 1.03,1.39; *P* = 0.017).

Conclusion: The prevalence of DN in Pasir Mas district was high and similar to other place. Hypertension and HbA1c are modifiable risk factors known associated for

development of DN. Thus, we need to screen all diabetic patients for DN and give them appropriate management.

Bilateral Eye Proptosis and Right Scalp Swelling as First Presentation in Acute Myeloid Leukaemia

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Abstract

Introduction: To describe a case of acute myeloid leukaemia presented with bilateral eye proptosis and swelling over the right temporal region as first presentation.

Case Report: A 16-year-old Malay boy presented with bilateral eye proptosis and painless, progressive right temporal scalp swelling for one month. It was associated with lower back pain and numbness over lower limb, difficulty in passing urine and altered bowel habit three days prior to presentation and progressed to paraplegia two days after admission. On examination, the vision was 6/6 bilaterally with absence of relative afferent pupillary defect. There was axial proptosis in both eyes with restriction of extraocular movement in all gaze. Full blood picture showed bicytopenia with presence of 78% blast cells. Computed tomography of brain and orbit revealed multiple hyperdense soft tissue scalp lesions and largest at right temporal region. Hyperdense lesion at bilateral lateral extraconal spaces causing displacement and stretching of lateral recti muscles were also observed. Magnetic resonance imaging of thoracolumbar no significant findings. Bone marrow aspiration and trephine consistent with acute myeloid leukaemia; M2/M4. He received radiotherapy and planned for chemotherapy but succumbed to his disease due to septicaemic shock secondary to perforated viscus.

Conclusion: A child or young adult who presented with rapidly growing proptosis and orbital mass, high index of suspicion should be made against acute leukaemia as one of the differential diagnosis.

Psychoeducational Intervention for Husbands of Menopausal Women: An Effective Integrated Approach

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Abstract

Objectives: To evaluate the effectiveness of psychoeducational intervention among husbands of menopausal women in improving their knowledge toward menopause and satisfaction with the intervention.

Methods: This was randomised controlled trial (RCT) conducted among husbands of menopausal women which were recruited from attendees of clinic in one of the tertiary hospitals in Kelantan. A total of 108 men were randomly assigned either to receive three sessions of psychoeducational intervention within two weeks period (intervention group, n = 59) or to the control group (n = 50). Psychoeducational intervention was designed by integration of psychoeducational model and task-centred model and had been tailored specifically to the perspectives of men. Husbands in the intervention group were provided with one session of educational component (two hours) and two sessions of supportive components (two hours). Self-administered knowledge questionnaire was developed and been validated in preliminary study, were administered at based line, week-two and month-three following intervention. Repeated Measure Analysis of Covariance (RM ANCOVA) and effect size (ES) was employed to determine the effectiveness among the study groups.

Results: All husbands reported high satisfaction (mean scores > 3.0) of this intervention. Husbands in the intervention group had significantly higher menopause knowledge ($P < 0.001$) scores than the control group and sustained until month three, with a larger effect size (ES = +1.16).

Conclusion: These positive outcomes have proven that the integrated approach of psychoeducational intervention is a promising intervention for effectively improved the knowledge and satisfaction level among husbands of

menopausal women and could serve as an intervention model.

Corneal Ulcer: A Devastating Ocular Side Effect of Erlotinib

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Abstract

Objectives: To report a case of lung carcinoma presented with ocular side effect of erlotinib.

Case Report: A 65-year-old lady was diagnosed with metastatic lung adenocarcinoma since 2017. She underwent one cycle of chemotherapy with cisplatinum-vinorelbine. She refused to complete the cycle of chemotherapy due to multiple systemic side effects. Thus, she was started on erlotinib 150 mg daily. Ten months after treatment with erlotinib, she presented with left eye pain for one week. Ocular examination showed anterior and posterior blepharitis in both eyes and corneal ulcer in the left eye. In view of ocular side effect of erlotinib, the drug was discontinued by chest team. *Proteus mirabilis* was isolated from left eye corneal scraping and the left eye corneal ulcer has responded well to topical eye drop gentamycin 0.9% and cefuroxime 5%. However, two weeks later she presented again with right eye pseudomonas corneal ulcer. Right eye evisceration was performed for severe perforated corneal ulcer. On retrospective history taking, erlotinib was restarted back just after healed left eye corneal ulcer. Erlotinib was discontinued after multidisciplinary clinical case discussion. She was asymptomatic at six months follow-up post discontinuation of erlotinib.

Conclusion: Erlotinib is a well-known drug causing cutaneous side effects. It is important to recognise ocular side effects of this drug in order to avoid blindness

A Case Report: Acute Myeloid Leukaemia (FAB M2)

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Abstract

Objectives: To determine immunophenotypic pattern in newly diagnosed cases of acute myeloid leukaemia with maturation (FAB, M2) by flow cytometry and its correlation with morphological findings and scattergram analysis from haematology analysers.

Case Report: A 14-year-old boy with anemia, thrombocytopenia, and severe leukocytosis (WBC 143,000/ μL) had been hospitalised in pediatric ward of Dr Soetomo General Academic Hospital with morphology of bone marrow aspirate revealed domination of myeloblasts 70% with some granules appeared in the cytoplasm and promyelocytes 15%. Scattergram analysis with PANDA classification grid from ADVIA 2120i revealed D1, P4 with differential diagnosis of AML M2, AML M3v and AML M4. White precursor cell channel (WPC) on the XN series reduced false positive flags for blasts and abnormal lymphocytes, compared to the XE.

Results: Complex flagging algorithms combine information from the XN WDF and WPC channels to produce a specific flag for either cell type ('blasts?' and/or 'Abn lympho?') or, if no abnormality is detected, the initial flag is removed entirely. In AML with maturation (FAB, M2), there is a reduced percentage of blasts with evidence of maturation. CD7, CD 13, CD 33, MPO, HLA-DR, CD 34 and CD 45 were expressed in immunophenotyping result.

Conclusion: Flow cytometric analysis of acute leukaemia done by a combination of patterns and intensity of antigen expression improves diagnostic yield in AML. Based on the scattergram, morphology and flow cytometry results, it is pertinent to conclude that flow cytometry results interpreted with morphology and scattergram are complementary.

Perceptions Regarding Medication Administration Errors Among Nurses in Hospital Universiti Sains Malaysia

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Abstract

Introduction: Medication administration is part of the nurse's responsibility and medication errors have long been a major concern for health. Knowing nurses' perceptions of medication administration errors is important in developing prevention strategies which is a part of patient safety.

Objective: This study aimed to investigate the perceptions of medication administration errors among nurses in a tertiary teaching hospital.

Methods: A cross-sectional study using a purposive sampling was employed on 44 nurses from three medical wards in a tertiary, teaching hospital in north east Peninsular Malaysia. Frequencies and percentages were used to describe the data.

Results: A total of 44 (100%) questionnaire were returned. Mean age was 29.32 ± 3.83. Nurses perceived that factors contributing to medication administration errors were illegible physician writing (100%), miscalculation of dose in nurses (97.7%), confusion between two drugs with similar names (95.5%) and when nurses were setting up an infusion therapy (93.2%).

Conclusion: It can be concluded that more than three quarter of nurses perceived medication administration errors were due to illegible physician writing orders, dispensing improper dose preparation, giving the wrong drug which had similar name are factors that contribute to medication administration errors and when setting up infusion therapy. The information gained can be used in educational programmes designed to promote the recognition of these errors which is paramount to patient safety. The information gained can be used in educational programmes designed to promote the recognition of these errors which is paramount to patient safety.

Keywords: patient safety, cross-sectional studies, pharmaceutical preparations, teaching hospitals, surveys and questionnaires

Epidemiology and Determinants of Serologically Diagnosed HIV-1 and HIV-1&2 in Tertiary Hospital of Eastern Peninsular Malaysia

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Abstract

Objectives: To determine the epidemiology and determinants of HIV-1 and HIV-1&2 among HIV patients in tertiary hospital of eastern Peninsular Malaysia.

Methods: This is a retrospective study of serologically diagnosed HIV positive patients from the Microbiology Department of Hospital Raja Perempuan Zainab (II), Hospital Universiti Sains Malaysia and Hospital Nur Zahirah from January 2016 until December 2018. A newly diagnosed patients aged > 12 among Malaysia citizen were included. All collected data were analysed by SPSS version 24 which include descriptive statistic for sociodemographic data, Pearson Chi-squared for association between type of HIV and serological evidence of Hepatitis C (HCV) and tuberculosis. Multiple logistic regression model was used to identify the risk factors. A *P*-value of ≤ 0.05 was considered as statistically significant.

Results: Out of 519 serologically diagnosed HIV, 344 (66.28%) were HIV-1 and 175 (33.72%) were HIV-1&2. HIV positive were highly distributed in Malay male in both groups. Most HIV-1 patients were single, unemployed and presented as pulmonary tuberculosis. HIV-1&2 mostly employed in unprofessional group and asymptomatic at diagnosis. The mean age was slightly higher, in HIV-1&2 (39, SD = 8.858) compared to HIV-1 (38, SD = 11.136). The commonest mode of transmission was by sexual contact (31.87%) in HIV-1 and IVDU (13.63%) in HIV-1&2. Tuberculosis (*P* = 0.005) and HCV (*P* < 0.001) were significantly higher in HIV-1 as compared to HIV-1&2. IVDU was a significant determinant to develop HIV-1&2 (adj OR: 3.5, 95% CI = 1.875–5.227, *P* < 0.001).

Conclusion: Our study is limited by small number of patient, a much larger scale study should be conducted,

with molecular determination of HIV type, for a better understanding of HIV patients who are IVDU and preventive measures of treatment failure as HIV-2 is intrinsically resistant to non-nucleoside reverse transcriptase inhibitor (NNRTI), an anti-retroviral therapy (ART) used as first line therapy in Malaysia.

Keywords: HIV-2, HIV-1, retrospective studies, tertiary care centers, risk factor

Nosocomial Infections in Burn Unit, Hospital Kuala Lumpur: A 7-Year Experience

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Abstract

Introduction: Nosocomial infections (NIs) are infections appearing in a patient while in a healthcare facility, absent at the time of admission. According to WHO estimates, approximately 15% of all hospitalised patients suffer from these infections. NI is a serious complication in burn units. In patients with severe burns, sepsis is the main cause of death.

Methods: We present a summary of NIs in Burn Unit, Hospital Kuala Lumpur (HKL) from year 2012 to 2018. Organisms represented include *Pseudomonas aeruginosa* (*P. aeruginosa*), *Acinetobacter baumannii* (*A. baumannii*), *Klebsiella pneumoniae* (*K. pneumoniae*), methicillin-resistant *Staphylococcus aureus* (MRSA) and *Escherichia coli* (*E. coli*).

Results: The annual NI rate (percentage of patients with NI from the total number of patients admitted) has reduced two folds over the seven years. In concert with global distribution, *P. aeruginosa, A. baumannii* and MRSA remain the most common NI causing organisms seen in the facility. The population of *P. aeruginosa* is on the rise, in contrast to that of *A. baumannii*, which is on an obvious decline. MRSA and *K. pneumoniae* remained fairly constant over the years. Only a negligible number of specimens returned positive for *E. coli*.

Conclusion: With compliance to global preventive strategies for its spread and adoption of antibiotic control policies, an improved NI rate is achieved. Essentially, a team approach involving the burn surgeons, paramedic staff and infection control personnel is necessary in this ongoing effort. Prevention remains the mainstay in the management of NIs.

Keywords: Acinetobacter baumannii, burn units, methicillin-resistant Staphylococcus aureus, cross infection, Pseudomonas aeruginosa

The 'Blurred' Lines

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Abstract

Objectives: To demonstrate the advantage of bedside ultrasound to exclude potentially life-threatening chest pathology over other modalities.

Case Report: A 56-year-old lady with history of pulmonary tuberculosis contact was diagnosed with right diabetic foot ulcer and planned for emergency debridement. She was stable hemodynamically with no signs of respiratory distress. Pre-operation chest radiography showed incidental finding of suspicious radiolucent line over left lung which was preliminary reported to be left pneumothorax. Bedside ultrasonography and plain computed tomography however showed no sign of pneumothorax. The opaque line which mimicked pneumothorax in the chest radiography was later reported to be skinfold artefact.

Results: Skinfold shadow is a common artefact on chest radiography, especially in anterior-posterior (AP) position. It can mimic the visceral pleural line and can be wrongly interpreted as pneumothorax.

Based on a meta-analysis review, the usage of ultrasound to detect pneumothorax has higher negative predictive value compared to chest radiography. Ultrasound could provide real-time bedside confirmation of a pneumothorax, without the need to expose patient to higher radiation from CT thorax or repeated chest radiography.

Conclusion: Skinfold artefact can be mistakenly interpreted as pneumothorax on chest radiography and this potentially life-threatening pathology can be excluded with bedside lung ultrasonography. The higher sensitivity of ultrasound compared to chest radiography and its immediate availability compared to CT thorax could avoid delay in management of patient. CT scan is considered 'gold standard'

imaging modality in detecting pneumothorax, it requires more resources and could further expose patient to the risk of unnecessary radiation.

Keywords: pneumothorax, incidental findings, ultrasonography, thorax, X-ray computed tomography

Phenomenal of Helminthiasis in Northern Thailand

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Abstract

Objectives: Worldwide, food borne infections are emerging as a major public health problem, with more than 50 million people being infected. The following estimates are based on those of the World Health Organization (WHO) between 1975–1986. Clonorchiasis and Opisthorchiasis: 19 million infected; Paragonimiasis: 3.2 million infected; Fasciolopsiasis: 10 million infected; Ascariasis: 1 billion infected; Hookworm: 900 million infected; Trichuriasis: 500–800 million infected; Strongyoidiasis: 35 million infected; all continue to be significant public health problems in Thailand. Ministry of Public Health has established a national plan to promote and coordinate interaction and intervention among provincial public health sectors. The purpose of these studies to intended investigate the prevalence and associated factors with helminthiasis.

Methods: The investigators were to observe and conducted on reliable information regarding the nature and prevalence of helminthiasis in remote area, Thailand. This phenomenal situation investigated the children and their parent for parasitic diagnostic techniques.

Results: The main outcome showed the majority of parasitic infection among the Thai hill tribe people was 15.4%. The helminthiasis prevalence of *Ascaris lumbricoides*, *Taenia* spp. and hookworm were 11.10%, 2.60% and 1.70%, respectively. The purpose of strategy and control showed that the prevalence of helminthiasis is still high and require the health educational programme in the remote area.

Conclusion: The investigators would propose the health promotions and behavioral investigations can help to solve the problems based on learning ability for developmental and self-consciousness on the individual level and community for the prevention and control of parasitic worms' infection.

Keywords: helminthiasis, ascaris lumbricoides, Thailand, prevalence, population groups

Spatial Analysis of Malaria Situation Using Geographic Information System

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Abstract

Introduction: Malaria is a major public health problem in the tropical country. Malaria in human can be caused by any of four species of *Plasmodium*: *P. falciparum*, *P. vivax*, *P. ovale* and *P. malariae*. Many field studies have found a correlation between the presence of malaria parasites of different species in the same human host. Positive correlation between exposure to and hence prevalence of different species of *Plasmodium* might be expected, because they are all transmitted by the same mosquitoes. Knowing this, the local Health Department has placed a programme to educate the local residents about health risk factors that people in this area are facing, in particular the dangers and symptoms of a malaria infection.

Methods: This study was performed to evaluate these efforts by determining the malaria infections and also integrated the map of malaria in Si Saket Province.

Results: The overall prevalence of malaria still high in the Khun Han district and also majority of patients were farmer, the age group of 25–45 years with *P. vivax* 74.0% and *P. falciparum* 24.5%. From this phenomenal of the study can now being used as the basis of a malaria monitoring system which has been jointly implemented by Vector Borne Disease Control Programme, Ministry of public health, Thailand.

Compared to infection rates in similar studies, the results of this study indicate that, overall, the Health Department's efforts are meeting with relative success. The low percentage of infected individuals shows that the villagers are using the information that they have received to help combat infection.

Conclusion: With this study, we hope to provide valuable information to the residents and local Health Department in Si Saket Province in order to develop further prevention programmes for malaria.

Keywords: *plasmodium, falciparum malaria, Thailand, public health, prevalence*

as health education and awareness raising initiatives, should be implemented on high-risk groups, under community and policy.

Conclusion: These findings indicate that melioidosis represents a complex geographical-socioecological public health problem in Sisaket province, Thailand. The control requires an understanding and modification of the coupled human and natural variables that disease transmission in endemic communities

Keywords: *melioidosis, Murkholderia pseudomallei, Thailand, geographic information systems, risk factors*

Melioidosis: Sisaket Situation and Control

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Abstract

Introduction: Melioidosis causes a larger disease burden than many tropical diseases that are recognised as neglected, and so it should be reconsidered as a major neglected tropical disease. *Burkholderia pseudomallei* is the major causative agent for melioidosis, it is often fatal, with a high prevalence in tropical areas. Although, data on risk factors and the geographic epidemiology of the disease are still limited. The several reports have also largely been based on the analysis of case series data.

Methods: Under the ministry of public health strategy, the investigator observed spatial analysis of geographic information system to identify risk factors for melioidosis in Sisaket Province, Thailand.

Results: The results shown suspected patient 400 cases, male 63.25%, average age 49.51-year-old and majority was farmers. The incidence was 98.06%, 57.41% and 40.08% in Non-Koon, Bencharack and Sriratana districts respectively. The majority of cases were seen during the wet season months over 65 times (0.041 [95% CI = 0.0025925, 0.1283128]), male more than female over six times (0.329 [95% CI = −0.2008836, 0.0672662]). The increasing trend of melioidosis incidence rates was significantly higher among working-age Northeast and ephemeral populations, males aged ≥ 40 years old. Targeted intervention strategies, such

Detection and Characterisation of *Corynebacterium diphtheriae* from Sabah Malaysia

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Abstract

Introduction: Diphtheria is a fatal infection caused by an aerobic gram-positive bacillus *Corynebacterium diphtheriae*. This toxin producing debilitating illness spreads to humans by respiratory droplets and its clinical symptoms range from fever with sore throat to the formation of toxemic pseudomembrane at the back of the throat.

Objectives: This study aims to identify *Corynebacterium diphtheriae* from suspected clinical isolates obtained from patients and its anti-microbial susceptibility pattern.

Methods: There were 13 throat swab specimens examined during the period of June 2016 to July 2018 from a tertiary care hospital in Sabah, Malaysia. All the isolates were cultured for the identification of *C. diphtheriae* from clinical samples onto blood agar and selective tellurite media. Then, these isolates were identified and confirmed by using Vitex2 Compact (BioMeriox, France). The antibiotic susceptibility was determined by using Kirby Bauer Method.

Result: We have identified four cases of *C. diphtheria*, all of which the isolates were susceptible to penicillin G,

ceftriaxone, trimethoprim-sulfamethoxazole, vancomycin, cefepime and cefotaxime except one case which was intermediate susceptibility to penicillin G and cefotaxime. The children were aged between 1 and 5 years old.

Conclusion: The result of our study reveals that there are very low incidences of *C. diphtheria* in Sabah. Nevertheless, continuous surveillance effort will be helpful for better understanding on the geographical spread and the transmission of the disease and may assist policy makers in public health interventions.

Keywords: *corynebacterium diphtheria, diphtheria, anti-bacterial agents, Malaysia, pharynx*

Evaluation of Sebia Capillarys 2 Flex Piercing in HbA1c Analysis

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Abstract

Objectives: The Sebia Capillarys 2 Flex Piercing (CE2FP) is a fully automated analyser to quantify Haemoglobin A1c (HbA1c) using capillary electrophoresis. This study is to evaluate the performance of Sebia CE2FP in HbA1c analysis and comparison between Sebia CE2FP with Biorad D10 High Performance Liquid Chromatography (HPLC).

Methods: The precision study was done by analysing quality control at normal and abnormal samples. Within run ($n = 15$) and between run ($n = 15$) coefficient of variation (CV) were determined for each test. For linearity study, normal and abnormal HbA1c samples (HbA1c of 4% and > 10%, respectively) were used. The analysis were carried out at seven different concentrations (volume ratios of 100:0, 90:10, 75:25, 50:50, 25:75, 10:90, 0:100) and the results were analysed using linear regression. Comparison analysis was performed using patients' samples from normal to high HbA1c ($n = 40$) by analysing on Sebia CE2FP then immediately on Biorad D10.

Results: The results showed good precision (within and between run) for both levels with all the CVs for normal and abnormal sample were less or equal to 1.6% and less or equal to 1.3%, respectively which is less than 2% of required CV for analytic reproducibility. The linearity study yielded good relationship between normal and high HbA1c. Regression analysis between Sebia CE2FP and Biorad D10 showed good correlation with high correlation coefficient value (r) of 1.00.

Conclusion: Sebia CE2FP demonstrated good precision and comparable with Biorad D10 HPLC for measurement of HbA1c. In addition, Sebia CE2FP is

equipped with special color code to identify 'atypical profile' allowing rapid identification of normal, elevated and presence of hemoglobin variant.

Keywords: *capillary electrophoresis, high pressure liquid chromatography, glycated haemoglobin A, reproducibility of results, quality control*

Wound Management of Necrotising Fasciitis in a Child with Acute Lymphoblastic Leukemia: A Case Report

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Abstract

Introduction: Necrotising fasciitis is a rare condition in paediatric population without apparent causative factors in most instances. It has high mortality rate especially without immediate surgical intervention. Besides that, it requires long hospital stay for post-operative wound care. The task of wound care can be difficult in paediatric age group and most often cause distress to parents.

Case Report: An 8-year-old boy with underlying acute lymphoblastic leukemia developed necrotising fasciitis of right leg after a minor trauma over his right dorsal of foot. He then progressed to development of septic shock. Extensive debridement of his right leg resulted in huge open wound measuring 30 cm × 15 cm. We had the opportunity of using skin allograft and negative pressure wound therapy, results in satisfactory wound healing. This patient attained full recovery after receiving skin autograft and cultured epithelial autograft as a form of reconstruction of extremities.

Discussion: Skin allograft as biological dressing can be cost effective and facilitate wound healing in complex wound. Adjunct wound dressing such as negative pressure wound therapy can assist in promoting granulation tissue growth by various mechanisms and avoid potential distress among parents and children.

Conclusion: The results observed in this patient suggest that skin allograft as biological dressing and the usage of adjunct negative pressure wound therapy could aid in wound healing prior to definite reconstruction of the extremities.

Keywords: *negative-pressure wound therapy, necrotising fasciitis, allografts, wound healing, precursor cell lymphoblastic leukemia-lymphoma*

Malnutrition Among Elderly in Northeast Malaysia

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Abstract

***Objectives*:** Malnutrition is defined as imbalances and deficiencies of nutrients, characterised by changes in body composition and resulting in diminished function. Our study aimed to determine the proportion of elderly at high risk of malnutrition and its associated factors in Kelantan, Northeast Malaysia.

***Methods*:** A cross-sectional study was conducted at outpatient clinic in 2017. Elderly aged 60 years and above were included and the exclusion criteria were elderly with a known case of severe depression, severe dementia or inability to hold dynamometer. The malnutrition risk screening tool-hospital, the modified barthel index and elderly cognitive assessment questionnaires were used in this study. The data were analysed using descriptive statistic and multiple logistic regression.

***Results*:** A total of 200 elderly participated in the study and the proportion of the high risk of malnutrition was 27 (13.5%). Poor handgrip strength (OR = 3.56, 95% CI: 1.41, 8.98; P = 0.007) and living arrangement (OR = 4.6, 95% CI: 1.31, 16.1; P = 0.017) were found significantly associated with the high risk of malnutrition in elderly.

***Conclusion*:** Poor handgrip and living arrangement were important determinants in elderly malnutrition. Early intervention is essential to prevent further deterioration.

Keywords: cross-sectional studies, early intervention (education), hand strength, geriatric assessment, surveys and questionnaires

Hb J Variant in Diabetic Patients

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Abstract

***Introduction*:** Glycated haemoglobin (HbA1c) is important for diabetes mellitus status monitoring. However, the presence of certain haemoglobin variants may affect HbA1c level and cause a discrepancy between the values of HbA1c with the blood glucose levels. Haemoglobin variants are inherited blood disorders and were estimated about 7% of the world population are carrying this genetic disorder. Hb J is a rare variant, usually found incidentally and can cause a false measurement of HbA1c. The patient with Hb J is generally asymptomatic even in a homozygous state with a normal haematological blood picture.

***Case Report*:** We describe the cases of Hb J variant of these two unrelated diabetic patients who noted to have falsely high HbA1c levels.

***Conclusion*:** Hb variants can lead to mismanagement of diabetes mellitus patient. Therefore, great caution should be exercised during the interpretation of HbA1c especially in populations with a relatively high prevalence of Hb variants. Furthermore, coinheritance with other globin chain defect may cause clinical significance. Early diagnosis with complete workup should be done to prevent such occurrence.

Keywords: glycated haemoglobin A, blood glucose, prevalence, early diagnosis, hematologic diseases

Molecular Genotyping of Clinical *Burkholderia pseudomallei* Isolates from Hospital Universiti Sains Malaysia Using Multi Locus Sequence Typing

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Abstract

***Introduction*:** Melioidosis is a tropical infectious disease caused by a Gram-negative bacteria known as *Burkholderia pseudomallei*. The epidemiology of the *B. pseudomallei* remain under reported and had been the global concern in worldwide. Multi-locus sequence typing (MLST) is one of the established genotyping methods used to explore *B. pseudomallei* epidemiology and its genetic diversity among populations.

Objectives: To determine the distribution of *B. pseudomallei* clinical isolates and its genetic relatedness among local isolates.

Methods: In this study, 33 clinical isolates from 33 positive patients admitted from 2014 to 2019 and living in eight districts of Kelantan were retrieved from database of Hospital USM. Genomic DNA extraction and PCR amplification of seven housekeeping genes were performed prior to DNA sequencing. Allelic profile genes for each was subjected in order to assign allelic profiles for each genes and their sequence type (ST) were determined.

Results: MLST analysis of 33 clinical isolates had revealed nine different reported STs (ST10, ST50, ST54, ST84, ST289,ST345, ST366, ST371, ST414). Most of the reported ST belonged to Southeast Asia region where the predominant sequence type is ST371. Seven novel sequence types (ST1731, ST1732, ST1733, ST1734, ST1735, ST1736, ST1737) were found when compared the dataset in the pubMLST database. Phylogenetic tree showed their genetic relatedness to each other and to other local isolates from Southeast Asia origins.

Conclusion: Overall, the findings suggest that Kelantan isolates are closely related to circulating isolates from Southeast Asia.

Keywords: *melioidosis, burkholderia pseudomallei, multilocus sequence typing, phylogeny, genotype*

Elucidating the Roles of Alpha-2 and Alpha-11 Giardins in the Protozoan Parasite *Giardia intestinalis*

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Abstract

Introduction: *Giardia intestinalis* (synonymous *G. duodenalis* and *G. lamblia*) is a prevalent gastrointestinal parasitic protozoan and is a cause of diarrheal disease throughout the world. The emergence of drug-resistant parasites and inadequate knowledge of how microaerophilic *G. intestinalis* survives in the oxidative stress intestinal environment thwarts efforts to control human giardiasis. The anti-oxidant role of annexin was known in both plants and mammals and has not been reported in parasites. Alpha-2 and alpha-11 are annexin-like molecules in *G. intestinalis*.

Objectives: To investigate the roles of alpha-2 and alpha-11 giardins in the anti-oxidant defence system of *G. intestinalis* and to determine gene expression level of alpha-2 and alpha-11 giardins in *G. intestinalis* exposed to various concentration of H_2O_2 of different time-points.

Methods: Hydrogen peroxide (H_2O_2) was used to induce oxidative stress. The level of intracellular oxidant with increasing H_2O_2 concentrations (0, 0.1, 1, 10, 100, 1000 mM) was determined by the use of cellular ROS detection assay. The in vitro cytotoxic activity of H_2O_2-induced *Giardia* was investigated by MTT assay. Both IC_{50} and IC_{25} were determined by GraphPad Prism software. Total RNA of untreated and H_2O_2-treated *Giardia* at IC_{50} and IC_{25} was extracted at different time-points (1 h, 4 h, 8 h, 24 h) for alpha giardins gene expression study by real-time PCR.

Results: Increased concentration of H_2O_2 showed higher cell death due to increased accumulation of ROS in *G. intestinalis*. Gene expression analysis showed significant up-regulation of alpha-2 and alpha-11 giardins in H_2O_2-treated *Giardia* as compared those of untreated *Giardia*.

Conclusion: The annexin-like molecules, alpha-2 and alpha-11 giardins play a significant role in the modulation of oxidative stress in *G. intestinalis*.

Keywords: *giardia lamblia, giardiasis, giardia, reactive oxygen species, oxidative stress*

The Effects of Mindfulness-Based Stress Reduction Programme for Stress Reduction Among Nurses: An Intervention Study

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Abstract

Introduction: Job stress within healthcare setting is predicted to increase in future. Nurses have a greater opportunity to have stress among healthcare professions. Mindfulness-based intervention has a potential role in decreasing stress.

Objective: This study was conducted to evaluate the effectiveness of mindfulness stress reduction program in reducing stress among hospital nurses.

Methods: This was a single group, pre-post intervention study conducted in Hospital Universiti Sains Malaysia. A total of 35 nurses from different specialty areas participated in this one-day mindfulness programme followed by monthly maintenance session for three consecutive months. Validated Malay version of perceived stress scale (PSS) was used to measure the stress outcome and validated Malay version of mindfulness attention and

awareness scales (MAAS) was used to measure mindfulness level from pre- to post-intervention.

Results: Intention-to-treat analyses showed statistically significant reduction in perceived stress (P < 0.05, 95% CI: 0.06–3.02) with effect size (Cohen's d = 0.40). Further analysis found increased in age significantly predicted reduction of post-intervention perceived stress score (P = 0.01). The score for mindfulness level was improvement from pre- to post-intervention, but statistically was not significant (P = 0.71, CI: 3.09–4.51).

Conclusion: This study found that mindfulness-based stress reduction programme is potentially an effective programme to reduce stress among nurses.

Keywords: *mindfulness, intention to treat analysis, awareness, attention, occupational stress*

Prevalence and Associated Factors of Female Sexual Dysfunction Among Breast Cancer Patients in Northeast Malaysia

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Abstract

Objectives: Sexual dysfunction is a common complication among breast cancer patients following their treatment. The present study assessed the prevalence and the associated factors for female sexual dysfunction among the breast cancer patients in Kelantan.

Methods: Ninety-four eligible post-surgery female patients, aged 30–65 were recruited in this cross-sectional study to fill in questionnaire containing demographic, diagnostic and clinical information, together with Malay version of breast impact of treatment scale (MVBITS). Their sexual function was evaluated by using Malay version of female sexual function index-6 (MVFSFI-6). The data was analysed using descriptive statistic and multiple linear regression.

Results: Sixty-nine (73.4%) patients reported to have sexual dysfunction. Family history of breast cancer (P = 0.040), duration of marriage (P = 0.046) and frequency of sexual intercourse (0.002) are the identified associated factors for female sexual dysfunction in breast cancer patients after surgery.

Conclusion: Breast cancer patients experience declining in sexual function after treatment. Thus, health care providers and breast cancer patients should be aware of this potential sexual issue and address it accordingly during consultation.

Keywords: *breast neoplasms, cross-sectional studies, prevalence, physiological sexual dysfunction, surveys and questionnaires*

Unravel Downregulation of FGF8 and WNT8A Protein in Lip Tissue of Malay Non-Syndromic Cleft Lip Patients

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Abstract

Introduction: Non-syndromic cleft lip palate (NSCLP) is a complex birth defect occurs as a result of either genetic or environmental factor. It varies in worldwide populations through ethnic, race or geographical differences. This study was conducted due to the scarce report of genetic study in relation to this deformity in Malaysia.

Methods: The lip skin tissue was obtained from the consented NSCLP patients who underwent the cleft lip repair operation at the upper lip skin area and normal healthy individual as control. Regulation of FGF8, FGF10, Wnt8a and LRP5/6 were tested using western blot (WB) and validated by quantitative reverse transcriptase-PCR (qRT-PCR).

Results: The fold change difference of FGF8 (0.614 ± 0.1012-fold), FGF10 (0.7188 ± 0.1017-fold) and Wnt8a protein (0.9051 ± 0.0142-fold) was downregulated in cleft lip (CL) tissues compared to the normal tissues while LRP5/6 protein (1.2201 ± 0.1404-fold) was upregulated. Validation with qRT-PCR confirmed that FGF8 (P = 0.014) and Wnt8a (0.0762 ± 0.0227) expression were significantly reduced in CL tissues compared to normal tissues. LRP5 (0.3577 ± 0.1362) and –6 (0.3093 ± 0.2541) expression were also significantly reduced but FGF10 (P = 0.019) expression was significantly decreased in CL tissues.

Conclusion: Significant FGF8 and Wnt8a downregulation in CL tissues from the transcription to translation level confirmed the defective regulation had contributed to the cleft formation. The outcomes from this

preliminary study bring an idea to further assess the FGF and Wnt signalling pathway and its importance in the aetiology of clefts.

Keywords: cleft lip, down-regulation, reverse transcriptase polymerase chain reaction, human FGF10 protein, fibroblast growth factor 10

Protein Induced by Vitamin-K Absence-II (PIVKA-II) Levels Among Hepatocellular Carcinoma Patients in Hospital Universiti Sains Malaysia

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Abstract

Objectives: Hepatocellular carcinoma (HCC) is known to have poor prognosis. Serum alpha-fetoprotein (AFP) is the most widely used biomarker for HCC despite its limitation. Protein induced by vitamin-K absence-II (PIVKA-II) has been proposed as emerging biomarker for HCC. This study aimed to determine levels of PIVKA-II among HCC patients in Hospital Universiti Sains Malaysia and its sensitivity and specificity.

Methods: A one-year prospective cohort study was conducted at Hospital Universiti Sains Malaysia, Kelantan. A total of 54 HCC patients receiving treatment in Hospital USM and 40 healthy individuals were enrolled. Venous blood samples were obtained, and PIVKA-II levels were analysed using chemiluminescent microparticle immunoassay method using ARCHITECT plus analyser. Results were analysed by independent *t*-test. The area under receiver operating characteristic (AUROC) curve was calculated based on manufacturer's cut-off.

Results: Forty-nine male and five female HCC patients with mean (SD) age of 58.94 (9.28) years were studied. The median (IQR) concentration of serum PIVKA-II in HCC patients 988.36 (23832.82) mAU/mL was higher compared to healthy group 24.23 (10.44) mAU/mL; this difference was highly significant ($P < 0.001$). The area AUROC curve of PIVKA-II was 93% (95% CI: 89%, 98%). The test was shown to have 85.2% (95% CI: 72%, 92%) sensitivity and 97.5% (95% CI: 85%, 99%) specificity at cut-off 40 mAU/mL.

Conclusion: Our study indicates that PIVKA-II is an excellent tumor marker in differentiating HCC and healthy individuals. Future studies with multi-centered and larger sample size are warranted to explore the role of PIVKA-II in the management of HCC patients.

Keywords: acarboxyprothrombin, hepatocellular carcinoma, vitamin K, liver neoplasms, biomarkers

Associations Between Rheumatoid Arthritis and Schizophrenia: Application of Genetic Analysis

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Abstract

Objectives: To investigate five potential candidates of shared single nucleotide polymorphisms (SNPs) in rheumatoid arthritis (RA) and schizophrenia (SZ).

Methods: Five significant SNPs were selected from two large databases that are rs12745968, rs900865, rs9960767, rs13219354 and rs4822752 with their representative genes; FAM69A, LOC105376567, TCF4, HLA and CRYBB1, respectively. A total of 504 consented blood samples (161

RAs, 161 SZs and 182 controls) were extracted for DNA. All samples were genotyped and data was validated using DNA sequencing for selected sampels. SHEsis and SPSS softwares were used for assessing allele and genotype frequencies. Association and odds ratio test were also calculated based on Chi-squared calculation with 95% confidence interval (CI) and P-value < 0.05 is considered statistically significant.

Results and Conclusion: Significant findings were found between SZ/controls (P = 0.002, 0.0004 and 2.21e010) and RA/controls (P = 0.02, 3.56e005 and 0.026) for genotypes frequency of rs12745968, rs4822752 and rs900875, respectively. Although SZ is a psychiatric disorder while RA is a chronic inflammatory polyarthritis disease, many studies were hypothesised; both diseases may involve variations in certain genes that affect both at the same time. This study shows that there is a link between SZ and RA in a genetic setting which motivates further study of the genes in detecting expression differences as well as gene copy number.

Keywords: alleles, single nucleotide polymorphism, genotype, rheumatoid arthritis, schizophrenia

The Non-Anecdotal Presentation of Tuberculous Mastoiditis—A Case Report

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Abstract

Introduction: *Mycobacterium tuberculosis* is a known pathogen causing tuberculosis and the prevalence is increasing worldwide contributed by many factors. As the pulmonary system remains the mainstay of infection, a rare extrapulmonary site such as mastoid is no longer spared.

Case Report: We report a rare case of tuberculous mastoiditis in a 48-year-old patient who presented with a month history of throbbing right ear pain associated with ear discharge. After failed medical treatment, surgical management in which cortical mastoidectomy was performed. Histopathological examination of mastoid revealed necrotising granulomatous inflammation consistent with mycobacterium infection. Other tubercular foci were not evident.

Conclusion: Mastoid is rare location for tuberculous infection. Tuberculous mastoiditis requires a high index of suspicion. Early detection is vital as it can cause major complications such as permanent hearing loss, facial nerve paralysis and intracranial spread of infection. Surgical management is the key for eradication of the diseased part as well as providing the access for tissue biopsy. This case report representing a rare tuberculous mastoiditis in a patient without risk factors for tubercular infection.

Keywords: mycobacterium tuberculosis, mastoiditis, risk factors, mycobacterium infections, osteoarticular tuberculosis

Turnaround Time for Notification of Serum Potassium Critical Values in Hospital Universiti Sains Malaysia in 2018

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Abstract

Introduction: The critical value is a laboratory result representing a pathophysiological state that offers risk to a patient's life unless appropriate therapy is promptly initiated and it is recommended to be notified in < 30 min. This study aims to determine the critical values of serum potassium reporting over time.

Methods: This was a retrospective study conducted in the chemical pathology laboratory from January 2018 to December 2018. Serum potassium of all requested samples were measured using Architect c8000 chemical analyser. The critical values of serum potassium are defined as less than 2.8 mmol/L and more than 6.0 mmol/L based on Ministry of Health Malaysia.

Results: Serum potassium critical values contributed 47.7% from total critical values of many analytes, 57.8% were low critical values and 42.2% were high critical values. Medical based wards showed the highest percentage of serum potassium critical values. The percentage of critical values

notification < 30 min was 79.97%. The mean of notification < 30 min were 10.67 (1.47) min for low critical values and 6.37 (1.8) min for high critical values. The mean time notifications > 30 min were 99 (77.9) min for low critical values and 129 (136) min for high critical values.

Conclusion: The most common notified critical values was serum potassium with predominantly notifications reported within < 30 min. The notifications reported > 30 min could be attributed to many factors.

Keywords: retrospective studies, laboratories, laboratory chemicals, potassium, risk

Association of Rheumatoid Factor and Anti-Cyclic Citrullinated Peptide Antibodies with Disease Severity Among Rheumatoid Arthritis Patients Attending Hospital Universiti Sains Malaysia: A Preliminary Study

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Abstract

Objectives: Rheumatoid factor (RF) and anti-cyclic citrullinated peptide (anti-CCP) are important biomarkers for rheumatoid arthritis (RA). Anti-CCP is more important in diagnosis and prognosis of RA compared to RF since anti-CCP test is more sensitive and specific, and RF can be present in other rheumatic disorders, infections and healthy individual as well. However, the association of RF and anti-CCP with RA disease severity remains unclear. This study aims to determine the association of RF and anti-CCP antibodies with RA disease severity.

Methods: This is a descriptive study of 29 RA patients who had definite RA according to the American College of Rheumatology (ACR)/European League Against Rheumatism (EULAR) (2010) classification criteria. The demographic data, RF, anti-CCP, disease severity (DAS28) and disease duration were recorded. RF was analysed using RF Direct Latex Test whereas anti-CCP level was analysed using enzyme-linked immunosorbent assay (AESKULISA) CCP Enzyme Linked Immunosorbent Assay (ELISA) method.

Results: This study involves 24 female and 5 male patients in which majority of the patients were Malays (89.7%), median (IQR) of age and disease duration were 54 (27) years old and 5 (10) years, respectively. There was a significant association between anti-CCP and RF levels, ($P < 0.05$). However, there was no significant association between anti-CCP level with disease severity ($P = 0.68$) and disease duration ($P = 0.54$).

Conclusion: Significant association was found between anti-CCP and RF levels. However, no significant association existed between the anti-CCP with disease severity and disease duration. Nevertheless, both RF and anti-CCP tests were required for the diagnosis of RA as they reflect disease severity as well as important markers for monitoring disease progression.

Keywords: rheumatoid factor, cyclic citrullinated peptide, anti-citrullinated protein antibodies, auto-antibodies, rheumatoid arthritis

Serum N-Glycan Profiling in Congenital Disorder of Glycosylation by Mass Spectrometry

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Abstract

Introduction: Protein glycosylation to produce a normal glycoprotein structure requires the biosynthetic addition and trimming of monosaccharide building blocks by enzymes located in the endoplasmic reticulum and the Golgi apparatus of the cell. The trimming and modification of these oligosaccharides must be in sequence to produce a normal glycan structure. The changes in glycan structures have been associated with one of the Inborn Errors of Metabolism known as congenital disorders of glycosylation. Mass spectrometry (MS) is a well-established approach for studying glycoprotein glycans. This is due to the small amount of sample required and the possibility of high-throughput analyses of complex mixtures.

Objective: This study aims to develop a simple, MS compatible and filter-aided protocol for the release of glycoprotein N-glycans from human serum.

Methods: Fifteen uL human serum was boiled in sodium dodecyl sulfate (SDS). The SDS was exchanged for urea, and then for volatile buffer. N-glycans release using peptide-N-glycosidase F (PNGase F) was carried out in the upper chamber of a membrane spin filter. The released glycans were recovered in the filtrate following centrifugation.

Results: Standard glycoprotein was used to assess sample processing protocol together with human serum. Non-derivatised N-glycans from standard glycoprotein and human serum were analysed using MALDI TOF/TOF MS. Bi and tri-antennary sialylated glycans were observed (m/z 2794, 3243, 3605, 3965 [M+Na]$^+$) from standard fetuin for validation of sample processing.

Conclusion: We have developed a simple approach for protein extraction and release of N-glycans from human serum in order to study protein glycosylation.

Keywords: mannosyl-glycoprotein endo-beta-N-acetylglucosaminidase, glycosylation, matrix-assisted laser desorption-ionisation mass spectrometry, congenital disorders of glycosylation, glycoproteins

Year-Round Burn Awareness Programme by the Reconstructive Sciences Unit, Universiti Sains Malaysia

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Abstract

Introduction: Burn injuries are devastating and pose serious public health concerns. In Kelantan, its occurrence is found to peak among children, especially during the festive seasons, where the young have access to fireworks. Believing in year-round burn prevention, the Reconstructive Sciences Unit, Hospital Universiti Sains Malaysia has been expanding its programmes to different community levels over the past one year. We hereby present the burn awareness activities held and include a discussion on the feasibility of conducting similar activities in the near future.

Case Report: Burn injury management, which includes resuscitation and reconstruction has been daunting despite ongoing advancements. Therefore, it is imperative to instill awareness on fire-related injuries, of which essentially improves knowledge on first aid and preventive measures.

Conclusion: Burn awareness requires mobilisation of educators alongside an effective prevention programme.

Keywords: first aid, public health, burn units, burns, fires