Abstract

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LABORATORY PERFORMANCE AND COST DIFFERENTIATION IN INR TESTING: A COMPARATIVE STUDY BETWEEN STANDARD TESTS AND POINT OF CARE TESTING (POCT) OF INR IN HEMATOLOGY LABORATORY HOSPITAL USM

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Introduction: Patients taking warfarin, need to be monitored regularly by using International normalised ratio (INR) as warfarin has a narrow therapeutic window. The monitoring will avoid the patient from adverse serious events such as thrombo-embolic complications due to lower therapeutic cover or life threatening haemorrhage due to excessive anticoagulation administration.

Objectives: The aims of this study were to investigate the correlation of different methods in INR testing; conventional (mechanical and optical methods) against point of care testing (POCT) of INR. This study also conducted a cost effective analysis of conventional method compared to POCT INR. Beside that, this study also explored prothrombin time (PT) clot waveform (derived from optical method of conventional test) and its potential applications.

Materials and Methods: A cross sectional study was conducted involving all patients with vitamin K antagonist in INR clinic and Klinik Rawatan Keluarga Hospital USM from July 2017 until July 2018. INR values were determined by mechanical method (STA compact or STA-R Evolution/ STA-R Max [Diagnostica Stago; New Jersey, USA]), optical method (ACL TOP 300 CTS [Bedford, USA]) and POCT INR (CoaguChek XS [Roche Diagnostics, Basel, Switzerland]).

Results: A total of 164 stable patients on warfarin fulfilled the inclusion criteria were selected. On blood sampling analysis, only 106 patients had POCT INR of 2.0–4.5. Forty-five patients had POCT INR value of < 2.0 and 13 patients had INR >4.5. There was significant good correlation of both conventional methods with POCT INR when analyzed for INRs between 2.0–4.5. It was found that the POCT INR was much more expensive than conventional INR method but save the patient's time by 8.29 of Incremental Cost Effectiveness Ratio (ICER). Moreover, descriptive analysis of the PT clot waveform showed statistically significant relationship of INR and the PT clot waveform parameters; length of baseline (b), delta changes (d), endpoint (e) and maximum velocity (v). Various clot waveform parameters among patients on warfarin may indicate individual variations that can affect the drug sensitivity and risk of bleeding even though with similar INR values.

Conclusion: POCT INR shortened the waiting time, allow patient satisfaction but its implementation needs to be scrutinised according to the organisation budget and facilities. Local guideline and workflow of POCT needs to be in place as the INR correlation is only applicable when the values are within 2.0–4.5. The role of conventional testing to confirm true values are still necessary. Further research to explore the PT clot waveform pattern and risk of bleeding is needed as the PT clot waveform may become a predictive method of this potential risk for patients on warfarin.

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IMPACT OF FAS/FASL GENE POLYMORPHISMS ON SUSCEPTIBILITY RISK AND IMATINIB MESYLATE TREATMENT RESPONSE IN CHRONIC MYELOGENOUS LEUKAEMIA PATIENTS

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***Introduction*:** Although Philadelphia chromosome translocation is implicated in the etiopathogenesis of Chronic Myeloid Leukemia (CML), evidence shows that host genetic susceptibility factors also are important in CML pathogenesis. But host genetic susceptibility factors which favours CML development are not clear. Despite Imatinib mesylate (IM) being the gold standard drug for treatment of CML, a significant proportion of CML patients on IM therapy develop resistance to the drug. The *FAS* mediated apoptosis pathway involving the FAS and FASL genes, plays a crucial role in IM's mechanism of action and regulation of apoptotic cell death. Promoter polymorphisms *FAS*-670 A>G and *FASL*-844 T>C which alter the transcriptional activity of

these genes may grant a risk to develop cancer and revamp the drug activities towards the cancer cell. We investigated the association of these two polymorphisms with the susceptibility risk and Imatinib mesylate treatment response in Malaysian Chronic Myeloid Leukaemia patients.

***Materials and Methods*:** In this study, 93 CML patients and 98 controls were enrolled. The polymerase chain reaction restriction fragment length polymorphism (PCR-RFLP) method was used to genotype the *FAS* and *FASL* polymorphisms. The associations of the genotypes with susceptibility risk and IM response in CML patients were assessed by means of logistic regression analysis and deriving odds ratio with 95% CI, analysed using SPSS Version 22.

***Results*:** We observed a significant association of *FASL*–844T>C polymorphism with CML susceptibility risk and IM response. Both the variant C allele and *FASL*-844 CC variant genotype carried significantly higher risk for CML susceptibility (OR 1.756, CI 1.163–2.652, P = 0.007 and OR 2.261, CI 1.013–5.047, P = 0.047, respectively). On the contrary, the heterozygous genotype *FASL*-844 TC conferred lower risk for CML susceptibility (OR 0.379, CI 0.176–0.816, P = 0.013). With regard to IM response, the heterozygous and homozygous variant genotypes and variant C alleles were found to confer a lower risk for development of IM resistance with OR 0.129 (95% CI: 0.034–0.489 P = 0.003), OR 0.257 (95% CI: 0.081–0.818, P = 0.021) and OR 0.486 (95% CI: 0.262–0.899, P = 0.021), respectively. No statistically significant association was observed for *FAS*-670 A>G polymorphism with either CML susceptibility risk or IM response.

***Conclusion*:** The present study showed significant association of genetic polymorphisms in apoptotic pathway gene especially *FASL*-844 T>C with susceptibility risk and also IM treatment response in Malaysian CML patients. Carriers of the *FASL*-844 CC variant genotype and variant C allele posed a higher risk for CML susceptibility while those carrying *FASL*-844 CC and TC genotypes and variant allele C posed lower risk for development of resistance towards IM therapy.

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RISK FACTOR RISK FACTORS FOR ACQUISITION OF CARBAPENEM RESISTANT ENTEROBACTERIACEAE AND CLINICAL OUTCOME IN HOSPITALISED PATIENTS; SINGLE CENTRE EXPERIENCE

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Introduction: In Malaysia, the emergence and rapid spread of CRE has become a public health threat. CRE patients are usually associated with substantial mortality and longer length of hospital stay mainly due to limited therapeutic options. Hence, identifying patients at risk for CRE acquisition is essential to develop an effective screening strategy within a health institution.

Objectives: This study was aimed to determine the risk factors of CRE isolation and assess their clinical outcomes.

Materials and Methods: Risk factors associated with CRE isolation were investigated by a matched case-control study from 1 January 2018 through 31 December 2108. One hundred and ten cases of CRE isolation were identified and matched for gender and age for 1:1 ratio to negative screening CRE patient as a control. Statistical analysis was done using SPSS version 22.

Results: Two hundred and twenty patients were included in this study (110 cases and 110 controls). CREs commonly seen in was *Klebsiella pneumoniae* (56.5%), Klebsiella species (18.2%) and Escherichia coli (11.8%). It was commonest isolated from urine (28.2%), rectal swab (20.9%), blood (20.0%), tracheal aspirates/sputum (19.1%) and other clinical sites (11.8%). Univariate analysis showed that admission to critical care unit (P = < 0.001) and mechanical ventilation (P = < 0.001) were associated with CRE acquisition but multivariate study not revealed it as significant risk factor. Compared with non CRE group, CRE group had a longer hospital stay ((20.2 days versus 15.8 days; P = 0.007).

Conclusions: Our data suggest there was association between admission to critical care unit and the use of mechanical ventilation. CRE isolated patients also had longer hospital stay compare to non-CRE group. The identification of risk factor among our local population helped to refine the criteria use for target active surveillance screening for CRE amongst in patient at time hospital admission.

Supervisor:
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CLINICOPATHOLOGICAL ANALYSIS AND MISMATCH REPAIR (MMR) PROTEINS PATTERN IN HEREDITARY NONPOLYPOSIS COLORECTAL CANCER (HNPCC) OF MALAY PATIENTS.

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Introduction: 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. Many studies on HNPCC have reported variation in different races and ethnicity. To date, there were only few reports on Malay population. With Malay being the majority population in Malaysia, we aimed to determine mismatch repair (MMR) proteins expression in colorectal cancer (CRC) cases among Malay patients using immunohistochemistry and to look for association with their clinicopathological features.

Materials and Methods: A total of 54 histopathologically confirmed CRC in Malay patients, diagnosed between 2008 and 2018 at the Department of Pathology, Universiti Sains Malaysia and Hospital Raja (P) Zainab II, Kelantan, Malaysia that fulfilled revised Bethesda Criteria, were selected and their paraffin embedded tissue containing carcinoma were immunohistochemically stained with monoclonal antibodies to MMR proteins- MLH1, MSH2, MSH6 and PMS2. Medical records were reviewed for clinicopathological information.

Results: From the 54 CRC cases entered into the study, there were 20 males and 34 females ranged between 17 to 60 years old (mean age = 37.6 years with standard deviation 9.6) with 92.6% (≤ 50 years) and 7.4% (> 50 years). 20 patients (37%) showed abnormal MMR staining abnormality, of which isolated loss of MLH1, PMS2 and MSH2 were seen in 2 cases (3.7%), respectively with concurrent loss of MLH1 and PMS2 occurred in 8 (14.8%), MLH1 and MSH2 in 2 (3.7%), one case with loss of MSH6 and PMS2 proteins expression (1.9%), and another with concurrent loss of MSH2 and MSH6 (1.9%). A case (1.9%) showed loss of three MMR proteins expression (MLH1, MSH2 and MSH6) with loss of all 4 MMR proteins expression seen in one case (1.9%). Abnormal MMR proteins expression was significantly associated with right-sided tumours ($P < 0.05$). Other pathological parameters such as age, gender, tumour type, grade, and its stage showed no significant association. The most common abnormality found was concurrent loss in MLH1 and PMS2 (14.8%), with loss of MLH1 was the commonest (38%). 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.

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COMPARING THE EFFECTIVENESS OF AIR-Q INTUBATING LARYNGEAL AIRWAY AND AMBU® AURAGAIN™ LARYNGEAL MASK AIRWAY AS A CONDUIT FOR ENDOTRACHEAL INTUBATION IN SIMULATED CERVICAL SPINE INJURY IN ADULT: A RANDOMISED CONTROLLED TRIAL

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Introduction: Commonly used methods to secure endotracheal intubation in patients with cervical spine injury are awake fiberoptic intubation, manual in line stabilisation and video laryngoscopy. As of recent, intubating second generation supraglottic airway devices have gain practitioners' attention as a new method to secure the airway in patients with difficult airway. Air-Q intubating laryngeal airway has been used in clinical setting for 10 years, while Ambu AuraGain is a relatively new supraglottic airway device that has not been extensively studied.

Objectives: This study is conducted to compare the effectiveness between air-Q ILA and Ambu AuraGain as a conduit for fiberoptic assisted endotracheal intubation in adult patients with simulated cervical spine injury.

Methods: Sixty six adult patients underwent various surgical procedures in Hospital Universiti Sains Malaysia were randomly assigned to receive either an Air-Q or Ambu AuraGain. The measured outcomes were the time taken for successful insertion of the LMA, the number of attempts taken to successfully insert the LMA, oropharyngeal leak pressure, Brimacombe score for fibreoptic laryngeal view and the duration of time taken for successful fiberoptic guided endotracheal intubation. Other outcomes monitored includes the haemodynamic parameters of the patients during the procedure and the complications.

Results: Oropharyngeal leak pressures were significantly higher in Ambu AuraGain group compared to Air-Q (34.9±6.4 cmH20 versus 28.6±7.8 cmH20, *P*-value = 0.001). There were no differences between time taken for successful insertion of LMA, number of attempts taken to successfully insert the LMA, Brimacombe score for fiberoptic laryngeal view and duration of time taken for successful fiberoptic guided endotracheal intubation. There were no significant differences in haemodynamic parameters and complication rate between the two groups.

Conclusion: Ambu AuraGain offers clinical use as effective as Air-Q as a conduit for fiberoptic endotracheal intubation in adult patients with simulated cervical spine injury. Significantly higher oropharyngeal leak pressures in Ambu AuraGain group may offer superior efficacy compared to Air-Q.

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PAIN REDUCTION USING SUPPLEMENTARY MUSIC THERAPY INTERVENTION DURING EXTRACORPOREAL SHOCKWAVE LITHOTRIPSY

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Introduction: Extracorporeal Shock wave lithotripsy (ESWL) is the preferred choice for the treatment of renal and ureteral stones. It is minimally invasive, requires less anesthesia, and yields high stone-free rates. Of late, the use of ESWL has been declining, owing to poor patient compliance with the procedure, largely caused by pain and anxiety.

Although analgesic drugs are recommended before and during ESWL procedure, many of these drugs do have significant side effect. Music is an established complementary treatment, known for reduction of pharmacological treatments to sedative doses, thus ensuring procedure compliance and pain-free environment for patients. Music promotes relaxation and a harmless addition to the patient in medical practice. This study aims to introduce patients to soothing music with Noise Cancelling Headphones (NCH) during ESWL and to evaluate its effect on pain and anxiety score when used simultaneously with regular analgesia during ESWL procedure.

Objectives: To examine the effect of supplementary music in addition to regular analgesia on pain perception and anxiety during ESWL, and the patient's willingness to repeat the procedure.

Patients & Methods: This is a prospective randomized control trial, conducted in the Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia from 5 September 2017 till 4 September 2018. A total number of 81 patients who scheduled for ESWL were randomised into three groups:

- Group 1 (Control, n = 27), no NCH and no music will be provided.
- Group 2 (Intervention, n = 26), patients will be given NCH without any music.
- Group 3 (Intervention, n = 28), patients will be given NCH and offered to choose their preferred music from a predetermined list. This group will listen to the music for 5 min before the procedure and continuously until the procedure has ended.

ESWL was performed following the existing standard of practice as stated, by trained staffs, under the supervision of an urologist or a senior medical officer. All three groups will be provided with Visual Analogue Scale (VAS) and The State Trait Anxiety Inventory (STAI) score form to be filled up before and after the procedure. Upon completion of ESWL, the additional questioning would be done to assess the willingness to repeat the procedure (0 = never, to 10 = happily). This is a partially blinded study between Group 2 & 3. The surgeon will not know which one of the intervention group is receiving music whereas the patient will be fully aware. Nevertheless, the surgeon will be aware of those patients from Group 1 as no headphones will be used.

Results: VAS scores among the three groups showed significant differences; the mean value of 5.41 (SD = 1.22), 4.27 (SD = 1.37), and 3.18 (SD = 1.47), respectively, with the P-value of < 0.001. Post-hoc analysis showed the mean VAS was significantly different between group 1 versus group 2 (P = 0.009); group 1 versus group 3 (P < 0.001) and group 2 versus group 3 (P = 0.013).

There was no difference in the mean of the State Anxiety Score and Trait Anxiety Score before and after ESWL for all three research conditions. Group 3 had highest mean score willingness, with a mean of 6.07 (SD = 1.78), followed by group 2 with the mean score of 4.77 (SD = 1.63) and group 1 with the mean score of 3.26 (SD = 1.40).

Conclusion: Supplementation of music therapy with NCHs have shown to reduce pain scores in a harmless, non-invasive and economical way during ESWL. The use of music increases patient compliance and provides an overall greater satisfaction.

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EFFECTIVENESS OF DIABETES CONVERSATION MAP™ ON INSULIN ACCEPTANCE AMONG TYPE 2 DIABETES MELLITUS INSULIN REFUSAL PATIENTS

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Introduction: Diabetes education is a very crucial aspect of management for a diabetic patient. Educations can be delivered either by group or individual. For busy health centres, group education is the most practical approach in the setting. However, in most of the public hospital setting, the group-based diabetes education is still not yet well established. In recent years, group-based diabetes education using the diabetes conversation maps (DCM) endorsed by the International Diabetes Federation has been popularised ever since the complete set was translated into Malay language. However, the effectiveness of this diabetes conversation map is still not known in our country.

Objectives: To compare the percentage of insulin acceptance between the intervention group (those who receive DCM education) and control group (those who receive standard counselling) and associated factors of insulin

acceptance among uncontrolled type 2 diabetic patients, who refused insulin initiation attending Klinik Rawatan Keluarga HUSM.

***Materials and Methods*:** An interventional study was carried out where a total of 88 type 2 diabetic adults from Klinik Rawatan Keluarga, HUSM with glycosylated haemoglobin (HbA1c) concentrations of 8% and or more and refused insulin treatment were randomised into intervention(those who receive DCM education) and control groups(those who receive standard individual education). Post sessions, participants were reviewed by the investigator to find out their acceptance towards insulin initiation. Logistic regression was done to look at the factors associated with the insulin acceptance.

***Results*:** The response rate was 97.7%. There was a significant difference in insulin acceptance between the intervention group education using DCM as compared to the control group using standard individual education module (86% versus 11%, $P < 0.001$). There was a significant association between history of relatives use insulin and insulin acceptance (AOR: 6.96; 95% CI: 2.30, 21.03; $P = 0.001$).

***Conclusion*:** Group education using diabetes conversation map (DCM) is effective in increasing insulin acceptance among patient who initially refused insulin treatment. We recommend using DCM in primary care centres for diabetic patients who had difficulties in accepting insulin. Having relative that use insulin is a significant associated factor among patient who accepts insulin.

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DIFFUSION TENSOR IMAGING (DTI) STUDIES AND AGE RELATED WHITE MATTER CHANGES (ARWMC) VISUAL RATING SCORE OF WHITE MATTER INTEGRITY IN NORMAL TO MODERATE CARDIOVASCULAR RISK PATIENTS.

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***Background*:** Diffusion tensor imaging (DTI) is a study of microstructural changes of the neuron. This study addresses the biological mechanisms, acquisition, and analysis of DTI measurements. The relationships between DTI values [fractional anisotropy (FA), mean diffusivity (MD), axial diffusivity (AD) and radial diffusivity (RD)] of white matter with the age related white matter changes (ARWMC) visual rating score were determined.

Objectives: The aims of this study were to find the correlation of the DTI values of white matter integrity with the ARWMC score, and investigate the predictors of the ARWMC score among the normal to moderate cardiovascular risk patients.

***Methodology*:** A total of 63 MRI brain images of subject from Kelantan state who attended Klinik rawatan keluarga (KRK), Hospital Universiti Sains Malaysia 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 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); $P < 0.001$] and QRISK2 score [b(95% CI): 0.235 (0.036, 0.433)]. 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 was the first region affected by aging. The myelin integrity was also affected first in the frontal lobe. Increasing age and higher QRISK2 cardiovascular risk factors shown to increase ARWMC score.

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ELUCIDATION OF CRUCIAL MECHANISMS UNDERLYING SECONDARY NEURONAL DAMAGE MEDIATED BY NITRIC OXIDE SYNTHASE IN PERIHAEMATOMA REGION OF INTRACEREBELLAR HAEMORRHAGE IN MICE

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***Introduction and Objectives*:** Primary brain injury after intracerebellar haemorrhage (ICbH) is due to tissue disruption and mechanical damage following accumulation of blood within parenchyma causing mass effect. Further

unfavourable outcome is associated with secondary damage to tissue around the haematoma, perihaematoma region. The underlying mechanisms of secondary neuronal damage following ICbH are still not clear. But this has been frequently discussed for intracerebral haemorrhage (ICH) of supratentorial origin many have studied on neuroinflammation in ICH. We formulated a study to investigate secondary neuronal damage following ICbH via nitric oxide (NO) pathway and other neuroinflammation markers, mainly toll-like receptor 4 (TLR4), nuclear factor kappa B (NFκB), tumour necrosis factor alpha (TNFα) and neuronal nitric oxide synthase (nNOS).

***Methods*:** ICbH induced by stereotactically injecting collagenase type VII-S into 24 Swiss Albino mice in two phases, 12 in each phase; three in control group, three in day 1 group, three in day 3 group and another three in day 7 group. All mice underwent locomotor assessment and subsequently sacrificed on day 1, day 3 and day 7, respectively. Perihaematoma tissues of cerebellum were harvested. Tissue samples from phase one taken for morphological, histological examination and NO analysis. Tissue samples from phase two were used for neuroinflammatory markers study via gene expression.

***Results*:** The locomotor behaviour significantly disturbed following ICbH at day 3 and day 7 as compared with control group along with morphological changes. Besides, NO level significantly increased on day 1 post induction and supressed gradually on day 3 and day 7. Genes expression of TLR4, NFκB, nNOS and TNF-α were significantly raised on day 3 post induction. Morphological studies of the perihaematoma region and tissue showed neuronal damage occurred from day 1 onwards, peaked on day 3 and continued on day 7.

***Conclusion*:** NO and NOS pathway with proinflammatory neuronal markers like TLR4, NFκB, nNOS and TNF-α showed to be correlating with morphological changes in the perihaematomal region of ICbH. Based on our findings, NO and NOS pathway has important role in the cascade of secondary neuronal damage of the perihaematoma region of ICbH.

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A PROSPECTIVE STUDY EVALUATING WOUND HEALING WITH SEA CUCUMBER GEL COMPARED WITH HYDROGEL IN TREATMENT OF SKIN GRAFT DONOR SITE

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***Introduction*:** *Gamat* (sea-cucumber) is a natural occurring fauna which is popularly used as traditional medication in Southeast Asian countries. There have been many studies done on its' biochemical properties and its' effects when applied on animal studies. The effect of *gamat* on human cutaneous wounds was studied using a split-skin graft donor site wound.

***Methods*:** This was a comparative case-control study done on patients in Hospital Universiti Sains Malaysia (Hospital USM), requiring split-thickness skin grafting, whereby, the skin graft donor site was divided to almost equal halves, and applied with both *gamat*-based gel on one side, with Duoderm® hydrogel on the other side. The epithelialisation of the wounds was observed and compared on different days. Pain score and pruritus score were also observed. Repeated measure analysis of variance (ANOVA) test and paired *t*-test was used to test statistical significance accordingly.

***Results*:** No significant differences were seen in rates of epithelialisation of wounds on days 10, 14 and 21 ($P > 0.01$). No significant difference was also seen in the pain score and pruritus score ($P > 0.01$).

***Conclusions*:** A *gamat*-based gel is comparable to conventional hydrogels in treatment of split-skin graft donor site. No adverse effects were observed in either group.

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DEVELOPMENT AND VALIDATION OF A NEW KNOWLEDGE, ATTITUDE AND PRACTICE QUESTIONNAIRE ON ALLERGIC RHINITIS PATIENTS TOWARDS INTRANASAL CORTICOSTEROID USAGE

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Introduction: Intranasal corticosteroids (INCS) are presently the most effective overall treatment for allergic rhinitis (AR) and are first-line therapy for adults in moderate-to-severe cases of allergic rhinitis or in individuals who are still symptomatic despite the regular use of antihistamines. Although INCS are the most commonly prescribed AR treatment, less than half of patients are fully satisfied with their INCS. Most patients discontinue treatment due to lack of long-lasting symptom relief and other various reasons side. In spite of numerous studies and the appreciation of the clinical importance of INCS usage for AR patients, research in this area has been impeded by absence of a questionnaire devoted to an assessment of self-reported evaluation of

knowledge, attitude and practice of AR patients towards INCS usage.

Objectives: The objectives of this research are to develop a new questionnaire evaluating the knowledge, attitude and practice of AR patient towards intranasal corticosteroids usage. Also, to assess the validity of the new questionnaire evaluating the knowledge, attitude and practice of AR patient towards intranasal corticosteroids usage in terms of face validity, content validity and construct validity.

Methods: This cross-sectional questionnaire study was conducted in two tertiary hospitals. The process comprised of development and validation stages. The development phase encompassed a literature review, expert panel review, focus group testing, and evaluation of the developed questionnaire. The validation phase consisted of content validity, face validity, construct validity, exploratory factor analysis and test-retest method. Cronbach's alpha was used to verify internal consistency. A revised final version was drafted. The knowledge segment consists of five questions, attitude segment consists of five questions and the practice segment consists of four questions.

Results: There were 77 participants were enrolled. Twenty of them (26%) have mild intermittent, 32 (41.6%) have mild persistent and 25 (32.5%) have moderate severe persistent AR. Ninety five percent indicated they understood the questions and found them easy to answer. Ninety percent indicated the appearance and layout were acceptable. Explanatory factor analysis revealed four factors associated with KAP. The Cronbach's alpha of the four factors ranged from 0.614 and 0.809. The final questionnaire composed of the knowledge segment consists of four questions, attitude segment consists of four questions and the practice segment consists of four questions was valid and reliable.

Conclusions: The instrument has satisfactory reliability and validity indices and can be used to measure AR patients' knowledge, attitude and practice regarding INCS usage. This study acts as a steppingstone towards deriving the KAP among AR patients to better understand and in turn improve treatment outcome by educating patients and rectifying their perception towards INCS usage.

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PATTERNS OF SEXUAL ASSAULT CASES ATTENDING THE EMERGENCY DEPARTMENT: A REVIEW

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Introduction: Sexual assault cases are managed by the Emergency Department (ED) at One Stop Crisis Centre (OSCC). We aim to identify the socio-demographic pattern of sexual assault survivors and the clinical characteristics of the assault, to determine the factors associated with delayed presentation, and to study the time taken for a complete management of these cases at the ED level.

Methods: We conducted a retrospective case review study of all sexual assault cases registered at our OSCC, Hospital Universiti Sains Malaysia from January 2012 to January 2017. A total of 304 cases were analysed.

Results: The median age of sexual assault survivors was 15 years old with positive skewness (1.3). Most of the victims were females (n = 291, 95.7%), single (n = 290, 95.4%), students (n = 235, 77.3%) and came from low socioeconomic class (n = 230, 75.7%) with education level of secondary school and below (n = 284, 93.4%). Rape constitutes the largest type of sexual assault (n = 246, 80.6%) and of these, 153 cases (62.1%) were statutory rape. The most common perpetrators were the victims' boyfriends (n = 107, 35.2%) while only 60 cases (19.7%) were victimised by strangers. Victims who previously knew their perpetrators were more likely to delay presentation (AOR 2.53, 95% CI: 1.37 to 4.68, P < 0.01). The median duration for managing a sexual assault survivor at OSCC was 6.48 h (n = 205, skewness 3.29).

Conclusions: Most sexual assault victims were young single female from low socioeconomic class. Their presentations were delayed if they knew the perpetrators. Age, gender, type of assault, previous sexual status and socioeconomic strata did not contribute to delayed presentation.

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ENDOMETRIAL CARCINOMA TRENDS IN HOSPITAL PULAU PINANG BETWEEN 2011–2016

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Introduction: Endometrial cancer is the most common gynaecological malignancy diagnosed and is the fourth most common cancer among women in the United States. National Cancer Registry in Malaysia reported that endometrial cancer constitutes 4.1% of all cancer involving women in 2007. The prevalence of endometrial carcinoma is expected to rise in developing countries due to the increasing prevalence of obesity, diabetes, hypertension and infertility. This study aims to demonstrate the demographics of

endometrial carcinoma in Pulau Pinang and also to describe the clinical features and outcome.

Objectives: To determine the demographics, clinicopathological characteristics and to correlate between type of treatment and outcome of endometrial carcinoma in Hospital Pulau Pinang.

Methodology: This is a retrospective review of medical records of patients with endometrial carcinoma which was diagnosed and treated in Hospital Pulau Pinang from 2011 till 2016. Data were collected using a proforma.

Results: There are 157 cases that fulfilled the inclusion and exclusion criteria were analysed. The mean age of diagnosis is 53.77 (10.56) years old where the youngest patient is 29 years old and the oldest patient in this study is 80 years old. Young age group patients when the patient's age is less than 40 years old consists 13.4% of the patients while 36.3% of patient is premenopausal and 63.7% is post-menopausal. Majority of the patients is Malay ethnicity, where it involved 40.2% of the endometrial carcinoma patients followed by the Chinese ethnicity- 39.5% and 19.7% Indian ethnicity. Most of the patients are obese—61.8% and the mean BMI is 29.89 ± 6.99 kg/m^2. Majority of the patients (76.4%) did not have any family history of malignancy, 6.4% of the patients have family history of breast cancer followed by family history of GIT cancer (5.1%), endometrial cancer (3.8%) and ovarian cancer (1.3%), 44.6% of the patients had diabetes, while 56.1% had hypertension. Six patients (3.8%) was diagnosed to have PCOS while 15.9% of the patients had infertility issues and 40.1% of the patients were nulliparous. The most common presenting symptoms for post-menopausal patients was post-menopausal bleeding (82%) and for pre-menopausal patients was menorrhagia (85.9%) followed by prolong menses (38.5%).There are statistically significant relationship between the increasing trend of endometrial thickness in both pre and post-menopausal group with incidence of endometrial cancer (P < 0.002). Endometroid type of endometrial carcinoma are more commonly diagnosed than non-endometroid—84.7% and 15.3%, respectively. Majority of the patients are at Stage 1 of disease which constitutes 54.2% of the patients. There is statistically significant relationship between the stage of disease with lymph node involvement (P < 0.005) and lymphovascular invasion (P < 0.005). Patients that received chemotherapy and concurrent chemotherapy with radiotherapy have a higher chance to get recurrence of the disease as most of the patients is at Stage 3 of disease. Majority premenopausal and postmenopausal patients did not have any evidence of disease during follow up—48(84.2%) and 86 (86%), respectively.

Conclusions: Endometrial cancer is increasing in trend especially in the younger age group. We need to identify patients with risk factor for endometrial cancer and earlier referral to tertiary hospital.

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LATERAL LUMBAR SPINAL STENOSIS: ASSOCIATION BETWEEN OSWESTRY DISABILITY INDEX, VISUAL ANALOGUE SCALE AND MAGNETIC RESONANCE IMAGING.

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Introduction: Degenerative spinal stenosis is a communal problem in the sixth decade of life involving L4/L5 and L5/S1 levels. Lateral spinal stenosis is often underestimated because of no established relationship between the clinical symptoms and MRI findings.

Objectives: The aims of this study were to establish an association between the degree of anatomical lateral stenosis, posterior disc height and disc degeneration from MRI with the daily disability based on Oswestry disability index (ODI) and pain severity based on visual analogue scale (VAS) for lateral lumbar spinal stenosis in Hospital Universiti Sains Malaysia.

Patients and Methods: This was a cross-sectional study involving 121 patients with distinct clinical symptoms of lateral lumbar spinal stenosis evaluated from 1 February 2017 to 30 September 2018. The clinical data were evaluated using Oswestry disability index (ODI) and visual analogue scale (VAS) while magnetic resonance imaging (MRI) was assessed qualitatively for the degree of anatomical lateral stenosis, posterior disc height and degree of disc degeneration. Statistical analysis was performed using SPSS version 23.0 to run Pearson's correlation test to evaluate the correlation between the posterior disc height with ODI and VAS and STATA version 14.0 was used to run the Fisher Exact Test to determine the association between the degree of lateral stenosis and disc degeneration on MRI with ODI and VAS. All P-values less than 0.05 were considered as statistically significant.

***Results*:** The analysis of 121 patients showed the mean age of the patients was 58.7±7.1 years old. The number of female patients was higher compared to a male patient which was 52.9% and 47.1%, respectively, 97.5% of the patient was married or cohabiting and 76.0% was having an abnormal body mass index. The mean score of ODI and VAS was 62.2±10.7% and 79.3±8.6 respectively, 49.6% of the patient presented with a crippling disability with ODI score between 61% and 80% while 59.5% presented with high pain intensity with a VAS score between 61 to 80. MRI assessment of anatomical grading lateral stenosis of L4/L5 level revealed that 45.5% of the patient had grade 2 lateral recess stenosis, 63.6% had grade 2 foraminal stenosis and 44.6% had extraforaminal stenosis. L5/S1 level analysis showed that 43.0% had grade 2 lateral recess stenosis, 62.0% had grade 2 foraminal stenosis and 29.8% had extraforaminal stenosis. 64.5% of patients had grade 4 disc degeneration of L4/L5 with mean posterior disc height of 7.0mm±1.7mm while 59.5% had grade 4 disc degeneration of L5/S1 with

mean posterior disc height of 6.3mm±1.8mm. However, no statistically significant association between clinical symptoms and MRI finding were found.

***Conclusion*:** There was no significant association between the clinical symptom of pain and disability between MRI finding of lateral lumbar spinal stenosis, posterior disc height and degree of disc degeneration. Adequate clinical pictures evaluation is crucial for accurate diagnosis and MRI finding should be properly correlated with clinical significances.

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MACULAR AND RETINAL NERVE FIBRE LAYER THICKNESS IN CHILDREN WITH TYPE 1 DIABETES MELLITUS

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Background: Diabetes-related retinopathy and neuropathy were regarded as a well-known complication in diabetic patients. This study aims to evaluate the macular and retinal nerve fibre layer (RNFL) parameters among children with Type 1 Diabetes Mellitus and compare the results with non-diabetic healthy controls in Hospital Universiti Sains Malaysia and discuss the literatures.

Design: Comparative cross-sectional study.

Materials and Methods: Paediatric patients treated for Type 1 Diabetes Mellitus in Hospital Universiti Sains Malaysia from April 2017 until March 2019 were enrolled. Demographic information, clinical manifestation, visual acuity, duration of diabetes, blood pressure and body mass index were documented. Glycosylated haemoglobin (HbA1c) levels, renal functions and blood lipid levels were collected from the patient's recent blood reports. Macular and retinal nerve fibre layer thickness measurements obtained by spectral-domain optical coherence tomography were compared. Descriptive statistics, Independent *t*-test for comparison of the group parameters and linear regression analyses were performed with SPSS statistical software 24.0 (SPSS Inc., Chicago, IL, USA).

Results: Out of 121 cases, 41 patients were type 1 diabetes mellitus and 80 cases were healthy children. The mean average of macular and retinal nerve fibre layer in children with type 1 diabetes mellitus were 277.56 (15.82) µm and 98.85 (12.05) µm, respectively. Children with type 1 diabetes mellitus showed significantly thinner mean values of the average macula, superior outer macula and nasal outer macula compared to healthy children. The mean RNFL and inferior RNFL in type 1 diabetic children were significantly thinner compared to controls ($P < 0.05$). No significant association found for mean macular thickness in diabetic children, however there was significant association between nephropathy and RNFL thickness.

Conclusion: There were decreased of mean macular and retinal nerve fibre layer thicknesses in children with type 1 diabetes mellitus. Nephropathy was the associated factor for retinal nerve fibre layer thickness. There were no association between ages of diabetes mellitus onset, duration of diabetes mellitus, haemoglobin A1C levels, mean arterial pressure, insulin treatment received per day and hyperlipidaemia with the mean macular or retinal nerve fibre layer thicknesses in children with type 1 diabetes mellitus.

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