

The 16th Annual Scientific Meeting of the College of Pathologists, Academy of Medicine of Malaysia was held at the Royale Chulan Seremban Hotel, in Seremban, Negeri Sembilan on 12th- 13th October 2017. Abstracts of paper (poster) presented are as follows:

AP-01. A palatal swelling transpires out as a nasal B-cell NHL- a case report

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Introduction: Primary sinonasal Non-Hodgkin's Lymphoma's (NHLs) is a rare condition, which emulates the presentation of a benign inflammatory disease. It is challenging to distinguish morphologically as well as radiologically sinonasal lymphomas from other malignant neoplasms. *Case Report:* We report a 37-year-old male patient who was presented with nasal obstruction, rhinorrhoea, bloody discharge/epistaxis, post nasal drip, facial swelling, orbital symptoms and fever. Endoscopic examination and CT scan of the paranasal sinuses with adequate amount of biopsy tissue is required for a definitive diagnosis. Considering this, endoscopic sinus surgery was performed to eradicate the disease as well as obtain a definite histological diagnosis. The mass was histologically proven as a Nasal diffuse large B-cell lymphoma(DLBCL) and confirmed by immunohistochemistry. Immunohistochemically, the cells were strongly positive for CD20, CD79a, BCL2, BCL6 and MUM1.CD10 was focally positive. Ki-67 index was <99%. After confirmation of the histological diagnosis, chemotherapy was started and with the first cycle, the patient improved with resolution of the facial swelling as well as pain and visual defects. *Conclusion:* The diagnosis of a sinonasal lymphoma is a challenge for otorhinologists. Results reveal that patients with sinonasal NHL tend to be missed as their symptoms are vague, and a definitive diagnosis usually requires a repeat and deep biopsy. A high index of suspicion, appropriate histopathological examination and immunohistochemistry is necessary to differentiate sinonasal lymphomas from other possibilities.

AP-02. Histopathological correlation for fine needle aspiration cytology of breast lesions, Hospital Melaka

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Introduction: Breast carcinoma is one of the leading causes of malignancy in females. The purpose of this research is to study the histopathological correlation for Fine Needle Aspiration Cytology (FNAC) of breast lesions in Hospital Melaka. *Materials and Methods:* This was a retrospective cross-sectional study done in our hospital from January 2016 to December 2016. All the patients with histopathology reports of breast lesion during these periods with prior FNAC were included. Patients with unsatisfactory smear (C1), non-representative samples, nipple discharge, papillary lesion and Phyllodes tumour based on Histopathology reports were excluded. *Results:* Total of 457 histopathological reports of breast lesions were collected, in which 186 reports with prior FNAC was available. We have accuracy of 98% for benign lesions and 91.67% for malignant lesions. Thus, the sensitivity for FNAC in diagnosing breast lesion is 91.67%, specificity is 98%; whereas Positive Predictive Value is 91.67% and Negative Predictive Value is 98.13%. Diagnostic accuracy is 96.77%. *Discussion:* Among the 186 cases, 150 cases were benign and 36 cases were malignant on histopathology. Out of 150 cases reported as benign via FNAC, 147 were confirmed benign on histopathology, while 34 cases were confirmed positive from 37 cases reported as malignant. Mean age is 22 years and 67 years for benign lesion and malignant lesion respectively. *Conclusion:* From this study, we can conclude that FNAC has an association with histopathological findings and ought to be performed on standard premises due to its accuracy and cost effectiveness. Thus, maximizes the availability of health care for patients with breast-related pathologies.

AP-03. Endometriosis associated ovarian clear cell carcinoma

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Introduction: Endometriosis is a benign condition and ovary is one of the common site affected by endometriosis. Malignant transformation associated with endometriosis is a rare complication. Sampson et al in 1925, first describe histological criteria to link ovarian endometriosis and malignancy. For ovarian endometriosis the commonest type of malignancy seen is clear cell carcinoma. *Case report:* A 43-year-old lady presented with dysmenorrhea. Radiological examination reveals a bilateral complex ovarian cyst with malignant features. She undergoes total abdominal hysterectomy with bilateral salpingo-oophorectomy and staging laparotomy. Grossly, the uterus and the left ovary are enlarged. The left ovary exhibits solid cystic tumour with an intact capsule. The right ovary, cervix and the endometrium are unremarkable. Microscopically, the left ovarian solid tumour shows clear cell carcinoma. with stromal and capsular invasion. Whereas, the cystic left ovarian tumour is composed of an endometriotic cyst. Endometriotic foci are also seen at the right ovary, both parametrium and the right fallopian tube. A final

diagnosis of left ovarian clear cell carcinoma with endometriosis and adenomyosis is made. *Discussion:* Endometriosis is common involving woman in reproductive age group. Majority presents with dysmenorrhea, pelvic pain and infertility. Previous studies have shown link between ovarian endometriosis and malignancy. It is found that patients with longstanding ovarian endometriosis have a high relative risk of ovarian cancer. An intermediary lesion i.e atypical endometriosis may play a role in endometriosis malignant transformation. Oxidative stress, inflammation and hyperoestrogenism have been implicated in the carcinogenic pathways. *Conclusion:* Biopsy of endometriosis should be considered establishing the diagnosis and to exclude underlying malignant disease.

AP-04. Key diagnostic features that delineates solid pseudopapillary neoplasm of pancreas from pancreatic neuroendocrine tumour: A case report and literature review

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Introduction: Both solid pseudopapillary neoplasm (SPN) and neuroendocrine neoplasm (PNET) are rare pancreatic neoplasms with overlapping histological features that may cause unnecessary diagnostic and treatment delay. It is crucial to distinguish between these two types of tumours because as compared to SPNs which are most often benign, PNETs have greater malignant potential. *Case report:* We describe a case of an asymptomatic 20-year old lady, who is a Hepatitis B carrier, found to have a head of pancreas incidentaloma during her annual surveillance hepatobiliary ultrasound. Pre-operatively, the solid pancreatic mass was misdiagnosed as PNET based on clinical findings, markedly raised serum chromogranin A, local infiltration seen in CT abdomen and fine needle aspiration cytology (FNAC). *Discussion:* This study summarizes the key diagnostic features of SPN so that prompt and accurate histological diagnosis can be made with careful assessment of the gross, microscopic and immunohistochemical findings. Pathognomonic microscopic features of SPNs that distinguishes them from PNET are the presence of papillary-like structures, degenerative features, characteristically grooved or reniform nuclei, clear cells, cercariform cells and the presence of typically periodic acid-Schiff positive and diastase resistant hyaline globules. Immunohistochemically, diagnosis of SPN can be confirmed by loss of membrane expression of beta-catenin and E-cadherin with nuclear positivity, classical CD99 expression and negative or focally positive expression of Chromogranin A. As seen in this case report, paranuclear dot positivity expression pattern of chromogranin A has also been described in literature. In a recent study, ERO1L-beta is found as a new biomarker specific to PNET.

AP-05. Simultaneous occurrence of breast carcinoma and mantle cell lymphoma: A case report

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Introduction: Patients with breast cancers have increased risk of developing non Hodgkin lymphoma following radio/chemotherapy, but the two malignant tumours co-exists rarely. This report describes a rare case of a breast cancer patient with simultaneous occurrence of metastatic carcinoma and mantle cell lymphoma in axillary lymph nodes. *Materials & Methods:* A 58-year-old Malay lady was first diagnosed as breast abscess, and incision and drainage was performed. She was referred to cancer centre after the diagnosis of breast carcinoma was made. A further left breast mastectomy and axillary lymph node dissection was done. *Results:* The breast showed residual invasive micropapillary carcinoma. The tumour cells were ER3+/PR2+/Her2Neu-. Of 37 dissected axillary lymph nodes, two showed metastatic breast carcinoma. There were various degrees of nodal effacement of all lymph nodes, and were characterized by monomorphic proliferation of small to medium sized lymphoid cells. The tumour cells were immunoreactive for CD5, CD20 and cyclin D1. Mantle cell lymphoma was confirmed. She received chemotherapy for both tumours subsequently. *Conclusion:* This case is unique in two aspects. First, the histological feature of breast carcinoma was invasive micropapillary carcinoma. Second, both metastatic carcinoma and MCL were identified within the same lymph nodes. Altogether three cases of concurrent breast carcinoma and mantle cell lymphoma have been described in English literatures previously. The simultaneous occurrence of both breast carcinoma and mantle cell lymphoma is more likely to be co-incidental findings.

AP-06. Diagnostic difficulties in the interpretation of fine needle aspiration cytology in salivary gland lesions: Lessons from our institution

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Introduction: Salivary gland fine needle aspirations (FNA) are a common specimen in most pathology practices and present difficult interpretation challenges because of overlapping cytologic characteristic of salivary gland tumours. To determine the sensitivity and specificity of FNAC diagnosis of salivary gland tumours and identify the sources of diagnostic errors. *Materials and Methods:* A retrospective review of cytological assessment of salivary glands lesion were compared with histopathological data. The false positive and false negative slides were reviewed to identify cytologic characteristics that contributed to false diagnoses. *Results:* Of a total of 151 FNA samples, 60 cases had a histologic diagnosis with interpretations of benign or malignant. The sensitivity and specificity for correct interpretation were 54% and 84% respectively. The most common false positive cases are Adenocarcinoma, Acinic cell carcinoma and Mucoepidermoid carcinoma. Benign cases with false positive diagnosis were Warthin tumour and pleomorphic adenoma. All discordant cases were reviewed and possible explanations for diagnostic errors are also discussed. *Conclusion:* These data confirm the difficulty associated with diagnosis of salivary gland FNA. Failure to recognize the diagnostically helpful stromal components is the most important factor in diagnostic errors in the discordant cases. Failure to recognize mucous cells, oncocytic component, abnormal nuclear features and mucoid background also, contributed to incorrect interpretation. Pathologists should be aware of cytologic overlaps and pitfalls that can occur in FNAs from this organ site in order to reduce false interpretations.

AP-07. Diagnosing ALK- anaplastic large cell lymphoma (ALCL) with skin lesions as first presentation: A collection of 2 casesBakrin Ikmal Hisyam¹, Tay Eng Tan², Kah Wai Ngan², Siew Lian Chong³*¹Department of Pathology, Faculty of Medicine and Health Sciences, University Putra Malaysia, ²Department of Pathology, Hospital Serdang, Selangor, Malaysia, ³Department of Hematology, Hospital Ampang, Selangor, Malaysia.*

Introduction: Anaplastic large cell lymphoma (ALCL) is a rare type of mature T-cell lymphoma that represents 2-3% of non-Hodgkin lymphoma (NHL). Cutaneous manifestation of ALCL can be due to primary cutaneous ALCL or systemic ALCL. Unlike systemic ALCL, primary cutaneous ALCL is anaplastic lymphoma kinase negative (ALK-). *Case report:* Two patients, aged 45 and 71-year-old were presented with rapidly growing ulcerated cutaneous nodules over the right cheek and left axilla, respectively. There were no B symptoms in both patients. A positron emission tomography (PET) scan of the first patient revealed fluorodeoxyglucose (FDG) hypermetabolism at bilateral cervical and left inguinal nodes. A computed tomography (CT) scan of the second patient showed bilateral axillary and left supraclavicular nodes enlargement with suspicious of lung involvement. Histopathological findings of both cases showed diffuse dermal infiltration of medium- to large-sized neoplastic lymphoid cells with occasional Hallmark cells. The cells were diffusely positive for CD2, CD3 and CD30. Both cases were negative for ALK. Based on the histological and radiological findings, a diagnosis of systemic ALK- ALCL was made for both cases. *Conclusion:* Based on the updated WHO classification of lymphoid neoplasms, improved criteria for the recognition of systemic ALK- ALCL now exists and it is no longer considered provisional. Subtyping based on the presence of the ALK protein is important because of the positive association between the presence of ALK and prognosis of the patient. ALK- ALCL is associated with advanced stage of the disease and patients can have skin lesions as first presentation.

AP-08. Primary carcinoma of the fallopian tube: A case reportNurul Shuhada Abdul Hamid¹, Sharifah Emilia Tuan Sharif¹*¹Department of Pathology, Universiti Sains Malaysia, Kubang Kerian, Kelantan*

Introduction: Primary fallopian tube carcinoma (PFTC) is uncommon, accounting for 1% of primary genital tract malignancy. Due its rarity, most cases were misdiagnosed as either ovary or peritoneum primary. *Case report:* A 73-year-old post-menopausal woman presented with acute abdominal pain and distension. Physical examination revealed distended abdomen, ascites with no appreciable mass. Other systems were unremarkable. Serum CA-125 was markedly elevated. Computed Tomography of the thorax, abdomen and pelvis showed a multiloculated multiseptated mass, likely right adnexa mass, measuring 9.8 cm in diameter. Laparotomy revealed a right fallopian tube tumour measuring 10 cm with right ovary embedded within. The left fallopian tube was clubbed with atrophic left ovary. *Pathological findings:* A focally ruptured right adnexa solid cystic tumour (7 cm), left adnexa mass (4 cm) and two uterine serosal nodules (0.1 and 0.7 cm in diameter, respectively). Histologically, the tumour was a high-grade serous carcinoma (HGSC) with widespread involvement of both adnexa and the uterine serosa. Native ovarian tissues and fallopian tubes were not identified. Extensive sampling revealed a focus of tubal intraepithelial neoplasia (TIC). *Conclusion:* Most PFTC are serous-type, and histologically indistinguishable from the ovarian counterpart. Features that favor PFTC are TIC and transition from benign to malignant epithelium. TIC may be diagnosed by histologic alone. Immunohistochemically, TIC strongly express p53, high ki-67 expression and diffuse p16 positivity. HGSC show diffuse expression of WT-1, variable ER and PR positivity and overexpression of p53. Although rarely found, the diagnosis of PFTC should be considered when evaluating pelvic masses.

AP-09. Sebaceous carcinoma: An immunohistochemical review among patients in Hospital Tuanku Jaafar Seremban

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Introduction: Sebaceous carcinoma (SC) is an aggressive cutaneous malignancy. The diagnosis can be difficult because SC can exhibit several histologic overlaps between squamous cell carcinoma (SCC) and basal cell carcinoma BCC. A correct diagnosis was made on initial histopathologic evaluation in only 23% of the cases. Therefore, strict differentiation is required. **Objective:** To identify a immunohistochemical profile of 2 cases of SC and investigate the utility of this panel to differentiate SC from SCC and BCC. **Methods:** This is a retrospective study. 2 cases of histopathologically diagnosed SC, one case of SCC and BCC are selected. An immunohistochemical stains was performed using 4 antibodies EMA, EA, Ki67 proliferative index and Pan CK on paraffin-embedded tissue block. Results were assessed by determining the percentage of positively stained tumour cells nuclei in total of 1000 cells. **Results:** In general, the staining pattern in SC was CK positive, EMA was positive at the sebaceous area only, EA focal positive in less differentiated SC and negative in well differentiated SC. SCC was CK positive, EMA positive and EA negative, whereas BCC was CK positive, EMA negative and EA diffuse positive. Ki-67 in SC is higher (>50%) than SCC (40-50%) and BCC (10%). **Conclusion:** The immunohistochemical profiles of SC, BCC and SCC using antibodies EMA, EA and Ki67 index are different and can be useful in assisting the pathologist in distinguishing them. For cases with borderline histological findings, small biopsy finding and specimen with artifacts compromising the tissue architecture, these marker studies helpful in supporting or suggesting the correct diagnosis.

AP-10. Ectopic pleural thymoma: A case reportNorashikin AA¹, Noor Hasni S¹, Nor Aniza Z²¹*Department of Pathology, Hospital Tuanku Ja'afar Seremban, Negeri Sembilan,* ²*Department of Radiology, Hospital Tuanku Ampuan Najihah, Negeri Sembilan*

Introduction: Thymoma is a neoplasm arising from or exhibiting differentiation towards thymic epithelial cells, regardless of the presence and relative numbers of non-neoplastic lymphocytes. It is usually located in the anterosuperior mediastinum but its occurrence in other mediastinal compartments, neck, thyroid, pericardial cavity, pulmonary parenchyma or pleura has also been reported. **Case report:** We describe a very rare case of a 65-year-old gentleman with accidental finding of right lower lung mass on chest radiograph after presented with traumatic lung injury secondary to motor vehicle accident. Computed tomography of the thorax revealed a heterogeneous mass with center hypodensity at the right lower thorax measuring 13.8 cm x 8.7 cm x 9.7 cm arising from the extraparenchymal and compressing the adjacent segments of right lower lobe likely pleural based. Histopathological examination showed biphasic tumour comprised of bland looking cells of dual morphology of spindle cells intermixed with ovoid cells. Immunohistochemical studies expressed strong positivity of the tumour cells towards CK7, CK5/6, CKMNF116, p63 and vimentin. Scattered lymphocytes amongst the tumour cells expressed CD3, CD20 and CD45. Ki-67 showed low proliferative activity of less than 2%. Although ectopic pleural thymoma is a highly unusual phenomenon, this entity should be considered as one of the possible differential diagnosis of pleural mass. **Conclusion:** This case highlights the importance of awareness for this entity, the characteristic morphological features and immunohistochemical profile that may help prevent a misdiagnosis.

AP-11. Characterising molecular subtypes of primary breast cancers in Hospital Tengku Ampuan Rahimah, Klang

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Introduction: Breast cancer is the most common cause of cancer deaths among women and is the most frequently diagnosed cancer among women in 140 of 184 countries worldwide. Breast cancers are currently classified based on its morphological features and grading, yet despite its morphology and histological grades, its responses to treatment are different. This indicates that there are other factors that may contribute to heterogeneity of responses, one of which is its molecular subtypes; luminal A, luminal B, Her2/neu and basal-like. Luminal A is known to be associated with carcinoma of lower grade hence carries the most favourable prognosis. **Objective:** This study aims to characterize primary breast cancer cases in Hospital Tuanku Ampuan Rahimah (HTAR), Klang into different molecular subtypes based on its immunohistochemical staining characteristics. **Materials and Methods:** This is a descriptive and retrospective study from HTAR, Klang of primary breast cancer cases from 2010 to 2015, classification based on Malhorta et al. 2010. **Results:** There were a total of 252 cases included. It was found out that the commonest molecular subtype is luminal B (39%, 98/252 cases), followed by luminal A (34%, 86/252 cases), HER2/neu type (17%, 44/252 cases) and basal like (9%, 22/252 cases). Luminal A is associated with invasive carcinoma NST (p=0.03) and lower grade while non-luminal A subtypes are associated higher grades (p=0.07). **Conclusion:** The molecular sub-characterization of the primary breast cancer cases at HTAR shall be a stepping stone to many more studies in the future in Malaysia, and hopefully will better manage these patients.

CP-01. Correlation study of point of care testing (POCT) with STA R evolution for prothrombin time/ international normalized ratio (PT/INR) of warfarinised patientNorsheila M², Azlin I¹, Azma RZ¹, Syarifah Normasyitah TK A¹, Wan Nur Qistina M², Najiah AA¹¹Department of Pathology, ²Laboratory Diagnostic Services, UKM Medical Centre, Kuala Lumpur.

Introduction: Warfarin is the most common medication that being used for patient who has coagulation disorder. Prothrombin time (PT) and International Normalized Ratio (INR) blood test are used to monitor the warfarin level. Prothrombin time involves of extrinsic pathways as Factor VII, X, V, II and fibrinogen. The main purpose of this study is to correlate the PT/INR result via POCT devices (Xprecia Stride Coagulation) and compare to the reference laboratory haemostasis system (Star R Evolution). We also evaluate the device's precision and accuracy. *Methods:* Blood sample from capillary and vein of 70 patient's attending INR clinic were collected for the PT/INR test. The analysis of PT/INR was performed using capillary sample on Xprecia Stride Coagulation analyser and the venous sample were analysed using Sta R Evolution analyser. *Results:* Prothrombin (PT) and International Normalized Ratio (INR) test results demonstrated a strong correlation with Star R Evolution analyser, $r^2=0.929$ and $r^2=0.943$ respectively. Data analysis for precision study within run 20 consecutive measurements for each of low and high-quality control demonstrated a CV of $\leq 6\%$ and 5 consecutive runs of commercial QC demonstrated a CV of $\leq 3\%$ which was well below the industry-standard criteria of acceptance for CV ($\leq 10\%$). *Conclusion:* The main objective of this study has been achieved since only by comparing the value of r^2 for Xprecia Stride Coagulation and Sta-R Evolution analyzer. This study showed that POCT has very strong correlation for both PT and INR result when tested against a laboratory coagulation analyzer.

CP-02. Comparison of CKMB mass, CKMB-RI & troponin-I utility in UMMC

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Introduction: Acute myocardial infarction (AMI) presents the highest risk of death within the first hour of onset. Early diagnosis is vital to improve patient outcome. The objective of this study is to compare the cardiac markers used in UMMC patients. *Methods:* A total of 300 patients admitted from January to March of 2016 with chest pain had analyses of cardiac markers. Information was extracted from the Lab Information System (LIS) and the patients' clinical notes. *Results:* There were 258 patients positive for AMI with elevated cardiac markers (100% Troponin I vs 55% CKMB mass). Troponin I levels showed significant difference between AMI and non-AMI patients (p value <0.001); with 100% negative predictive value (NPV) and 91% positive predictive value (PPV) compared to CKMB. Troponin I demonstrated the best performance (AUC of 0.76, 95% CI 0.68 - 0.84) compared to CKMB mass/RI. CKMB mass/RI appeared to be the marker of choice to assess for reinfarction. One patient was positive for reinfarction with both cardiac markers elevated. *Conclusion:* Troponin I should be sufficient for the first diagnosis of AMI in UMMC patients due to its superior performance and lower per test cost (70 sen cheaper than CKMB mass/RI). The performance comparison in diagnosing reinfarction was not possible; as the choice of cardiac markers and the timing of testing did not seem standardised. CKMB mass/RI can be reserved for diagnosing reinfarction and in patients with CKD who may have false positive Troponin I.

CP-03. Six Sigma as a new quality control assessment tool for Siemens Advia 1800 in Chemical Pathology Laboratory, Hospital Melaka^{1,2}Nurul Syahidah Idris, ¹Yusmi Mohd Yunus, ²Ana Daliela Masiman, ²Noor Hafizah Yacob¹Health Sciences Department, Faculty of Engineering and Life Sciences, Universiti Selangor ²Chemical Pathology Unit, Pathology Department, Hospital Melaka

Introduction: Quality Control (QC) in a laboratory must be designed in a way that reported patients' result meet the quality requirement for their intended use. Six Sigma principle helps the determination of an excellent quality control (QC) procedure because it considers main components in statistical quality control assessment, which is accuracy and precision. The existing quality assessment procedure, the Westgard Multirule seems to have a weakness in terms of wastage due to false rejection caused by rejection rules that were applied uniformly on all analytes regardless of each analyte's individual performance. *Methods:* In this study, sigma metrics for all routine analytes in Chemical Pathology Laboratory Hospital Melaka were calculated to determine new quality control rejection rules based on Six Sigma principle. The total number of QC rejection and false rejection were compared between both methods. Paired sample t-test was carried out together with Eta square to compare the cost for performing quality control procedure. *Results:* Significant decrease was seen ($p<0.001$) in number of QC rejection, QC false rejection and cost for performing daily QC when Six Sigma principle is applied. *Conclusion:* Eta square result for comparison of cost to perform QC between the two methods were 0.954 indicating large impact size. Therefore, it can be concluded that Six Sigma Method was proven to be a better QC assessment tool in Chemical Pathology Laboratory, Hospital Melaka.

CP-04. “Sistem Maklumat Patologi (SMP)” imply as Hospital Duchess of Kent Sandakan web-based system in blood gas testing

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Introduction: “Sistem Maklumat Patologi” (SMP) is use to access Arterial Blood Gas (ABG) or Venous Blood Gas (VBG) results via web-based system. *Objectives:* The aim of this study is to determine if there is a significant difference in waiting time before and after the implementation of SMP. *Methods:* This is a cross-sectional study. The analysis of SMP was created by ICT Unit with collaboration of Pathology Department, HDOK Sandakan. The average waiting time based on monthly report in 2016 was 3.17 minutes (SD=11.97). Sample size of 1644 in each arm is required to achieve study power of 0.8, $\alpha < 0.05$ with detectable difference of 1.17 minutes (target improvement waiting time is less than 2 minutes). A simple random sampling of 1800 is done on before SMP sample results (PRE SMP) and after SMP sample results (POST SMP) respectively. Data of PRE SMP and POST SMP are compared using Mann-Whitney Test. *Results:* The statistical result demonstrated a significant in waiting time (Md =0.52 minutes, $p < 0.05$) between PRE SMP and POST SMP waiting time. *Conclusion:* After an implementation of Sistem Maklumat Patologi (SMP) the waiting period of ABG or VBG have become shorten. This is also supported by an implementation of point-of care testing at Emergency and Trauma Department (ETD), Intensive Care Unit (ICU) and Special Care Unit (SCN). This system helps laboratory personnel to report result within target time. We recommend SMP will be useful to identify repetition of request for all patient samples and avoid distribution of hard-copy results to the medical personnel.

FP-01. An autopsy study of the contribution of acute fatty liver disease in a postpartum woman

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Introduction: Acute fatty liver is a disorder, which may occur during pregnancy. It is associated with inherited defects in mitochondrial beta-oxidation of fatty acids, long chain 3-hydroxyacyl CoA dehydrogenase (*LCHAD*) deficiency. The accumulation of long chain 3-hydroxyacyl metabolites produced by the fetus or placenta is toxic to the liver, and cause liver disease. *Case Report:* The deceased, a 34-year-old woman para 4, was admitted to the hospital on postpartum day 18 with a diagnosis of infected Cesarean section with peripartum cardiomyopathy. She was admitted on the 3rd month of postpartum for about one month and was discharged with an unknown cause of hepatosplenomegaly with cholestatic jaundice. She succumbed to death five days after being discharged. Autopsy showed generalized jaundice with hepatomegaly (4.6 kg) with bile duct proliferation, minimal portal hepatitis, pan-lobular micro- and macro-steatosis, large extracellular fat vacuoles and minimal residual healthy hepatocytes. Heart sections showed fibro-fatty infiltration of the left and right ventricles, which indicated arrhythmogenic cardiomyopathy. Retrospective study of antemortem investigation showed deranged liver enzymes, coagulopathy, indirect hyperbilirubinemia and hypoalbuminaemia (7 g/L), which was evidenced since her 3rd trimester. Her previous pregnancies were uneventful. *Conclusion:* Acute fatty liver in pregnancy is an uncommon entity, but life-threatening. It comes with varied presentations and complications. From previous records, maternal and perinatal mortality were reported to be as high as 75% and 85%. A good clinical outcome can be expected from early diagnosis and improved delivery of fetus.

FP-02. Case report: The role of histopathology examination in criminal investigation – homicidal cardiac arrest

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Introduction: Pathologists had often encountered difficulties in handling deaths following physical assault with underlying medical illnesses. The issues raised by the defence may caused miscarriage of justice leading to additional problems. *Case report:* A middle-aged gentleman was assaulted by his colleagues and sustained soft tissue injury and fracture-dislocation of the left hip joint. After the incident, he had walked for one kilometer, and was found dead approximately 20 hours later. Autopsy demonstrated extensive subcutaneous hemorrhages and muscle injury. Heart sections showed significant of atherosclerosis of the left anterior descending artery. Troponin-I level was more than 10 000 pg/ml (normal < 15.6 pg/ml). Histology of the heart showed myocyte karyolysis with minimal neutrophilic infiltration, which suggest that the infarction was about one-day old. The infarcted areas involved were the anterior walls of the left ventricle which is corresponding with the myocardial region perfused by the occluded vessel. In conclusion, the deceased had been rendered vulnerable by his pre-existing ischemic heart disease, in which event the blunt force trauma, albeit not directly fatal on their own have served as a significant stressor in fatally aggravating his pre-existing heart disease. *Conclusion:* Coronary atherosclerosis is a common disease, which can be difficult to differentiate whether it is due to a sudden attack of the disease itself or triggered by an assault. The legal ‘standard of proof’ for a criminal case is proof beyond reasonable doubt. The pathologist must be able to prove the death had occurred within the emotional response period, even the criminal act had been ceased. The poor interpretation of autopsy and histological findings may lead to miscarriage of justice.

FP-03. Case report: Sudden death due to endocardial fibroelastosisLii Jye Tan¹, Faridah Mohd Nor¹, Mohamed Swarhib Shafie¹, Ran Zhi Tan¹, Ing Siong Hwang¹¹*Department of Pathology, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, Cheras, 56000 Kuala Lumpur, Malaysia*

Introduction: The term ‘endocardial fibroelastosis’ was introduced by Weinberg and Himmelfarb in 1943 and is characterized by procelain-like thickening of the ventricular endocardium. Endocardial fibroelastosis is an uncommon heart disorder characterized by diffuse profound thickening of the ventricular endocardium by fibrous tissue and elastic fibres, which involved the left side of the heart in majority of cases. *Case Report:* We report, a 22-year-old man, who had suddenly collapsed in a public area. Autopsy showed that the heart was grossly enlarged (436 gm), globular appearance with flabby consistency. The heart chambers were grossly dilated with diffuse whitish-yellowish thickening (1-2 mm each) of the ventricular endocardium from mitral valve to the apex. Histology showed pronounced thickening with fine and coarse deposition of elastic and collagen fibres, which was consistent with endocardial fibroelastosis. *Conclusion:* Endocardial fibroelastosis is a rare heart disorder, which affects infant and children. It appears to be a distinct pathological entity, but the precise pathogenesis remains unknown. It is not classified under the latest American Heart Association or European Society of Cardiology Classification of Cardiomyopathies. The lack of recognition of the disease is likely to impede our understanding of this disorder, diagnosis and treatment. Endocardial fibroelastosis often results in rapid and progressive cardiac decompensation and death. Early diagnosis and treatment will make a tremendous difference in the lives of these patients.

FP-04. Case report: A rare entity of huge ectopic thyroid gland in thoracic cavityLii Jye Tan¹, Faridah Mohd Nor¹, Mohamed Swarhib Shafie¹, Ran Zhi Tan¹, Ing Siong Hwang¹¹*Department of Pathology, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, Cheras, 56000 Kuala Lumpur, Malaysia*

Introduction: Ectopic thyroid tissue is a rare developmental disorder involving abnormal embryogenesis of the thyroid gland, which usually affects Asian women. The ectopic thyroid is usually found in the lingual and submandibular regions, and rarely occurs in the thoracic and abdominal regions. *Case Report:* We report, a 68-year-old woman with history of shortness of breath and chest discomfort. She had multiple consultations with different general practitioners, but the diagnosis remained obscure. She was found dead in sitting and leaning forward position at home. Autopsy showed a huge well-encapsulated mediastinal mass (14x12x7 cm; 580 gm), which was pressing on the right lung and heart. Histology showed multiple large sphenoidal structures comprised single layer cuboidal epithelial cells bounded by a basement membrane. The follicle contained homogeneous pink colloidal material. The ectopic thyroid was confirmed by immune-staining with thyroglobulin, however the *TTF1* was negative. *Conclusion:* Intra-thoracic ectopic thyroid is accounting for 1% of all mediastinal tumors. Patient with ectopic thyroid gland usually remains euthyroid clinically. The symptoms are mainly determined by the size of the tumor. It can manifest as dry cough, dyspnoea and haemoptysis. If the diameter of the tumor is more than 7 cm, it can cause severe right ventricular outflow obstruction and superior vena cava syndrome. The *CT* scan and *MRI* can be used to detect the tumour. Complete surgical resection might be necessary to reduce the compression effect of the tumour.

FP-05. Mama, my chest feels heavy (A curious case of mediastinal mass in teenager)

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Introduction: Intrathoracic tumor located in the mediastinum in pediatric and early adulthood may be both benign or malignant. Clinical presentation of these tumors is often non-specific, though 60% of the cases presented with common respiratory symptoms. These non-specific symptoms pose difficulty in diagnosis, and more often than not, patients developed acute respiratory symptoms. Symptoms can also occur due to various complications including vena cava obstruction or airway obstruction, leading to sudden unexplained death. *Case report:* This is a case of a mediastinal mass in teenager whereby the deceased presented with non-specific cough and mild dyspnea for over 6 months, before finally seeking medical treatment. Radiological examination showed a large mediastinal mass which subsequently necessitate biopsy. However, the deceased collapsed before the investigation was completed. An embolus was found within the pulmonary trunk and post mortem histopathological examination and immunohistochemistry revealed final diagnosis of primary malignant large B-cell lymphoma, a subtype of diffuse large B cell lymphoma which comprises of 5% of Non-Hodgkin lymphoma. *Conclusion:* The discussion of this case will be concentrated on the diagnostic process as well as development of complications including pulmonary emboli in the natural course of the disease.

FP-06. A case of mediastinal teratoma resulting in sudden infant death

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Introduction: Teratomas are tumours derived from more than one germ cell layer. They are interesting because of their obscure origin, bizarre microscopic appearance and sometimes unpredictable behaviour. To the best of our knowledge, posterior mediastinal teratoma has not been the subject of many publications. *Case report:* In this case report, we share our experience in the discovery of an enormous, histologically confirmed, mature teratoma arising from the posterior mediastinum in the left hemithorax of a 3-month-old male infant. Prior to his demise, the parents admitted that the child had an intractable URTI symptoms, for which the infant received an outpatient treatment from a local clinic. He was also noted to be decreasingly active during his last few days of life, associated with poor feeding and inconsolable crying. The unsuspecting parents, however, who attributed the symptoms to 'sawan tangis' did not seek further treatment as the child eventually succumbed to the mechanical effect of this benign, surgically curable tumour. *Conclusion:* The location of teratoma at the posterior mediastinum in this child is unusual. Though benign, undiagnosed mature mediastinal teratoma can cause life threatening respiratory distress and death as described herein.

HM-01. Effects of storage on haemolysis of glucose-6-phosphate dehydrogenase (G6PD) deficient blood

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Introduction: G6PD deficiency is characterised by red blood cells destruction in response to oxidative stress. (G6PD) deficient blood is lacking in anti-oxidant properties which protect the RBC membrane and it was observed that specific RBC units are more likely to haemolyse during storage. *Objectives:* To determine prevalence of G6PD deficiency among blood donors in mobile donation centre in Terengganu and effects of storage on haemolysis of G6PD deficient blood. *Materials and methods:* In this cross-sectional study, 440 healthy blood donors were screened for G6PD deficient status via G6PD fluorescent spot test. About 60ml of blood was collected from 10 G6PD deficient donors and 10 units were collected from donors who were not deficient for G6PD (controls). Sampling was done from transfer bag for each cases and controls on day 1, 7, 14, 21 and 35. Estimation of haemoglobin, free plasma haemoglobin (Hb), percentage of haemolysis and free plasma potassium (K⁺) was performed. *Results:* The prevalence of G6PD deficiency among blood donors in mobile donation centre in Terengganu was 2.7% and all of them were asymptomatic. It was found that there were no significant differences between the cases and controls in any of the blood parameters assessed. *Conclusion:* The presence of blood donors with G6PD deficiency is not a rare event and most of them are asymptomatic. This study demonstrated there is no difference in the effects of storage between G6PD deficient and non G6PD deficient blood. However, the data obtained is not enough to be used as a baseline to implement screening, due to the limited sample size. However, identification of G6PD deficient donors would prevent the use of G6PD deficient blood when the haemolytic complications could be relevant especially for high risk patients as premature infants and neonates.

HM-02. Hb G-San Jose versus Hb Q-Thailand: A tale of two cases

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Introduction: Hemoglobinopathy are common inherited hemoglobin disorders in Asian countries. Both thalassemia and hemoglobin variants have been increasingly reported worldwide. One form of the β variant is Hb G-San Jose and α variant is Hb Q-Thailand. Both Hb variants are primarily found in individuals of Mediterranean and Southeast Asian. There was no Hb G-San Jose reported in Malaysia and this variant has similar properties in Capillary Electrophoresis (CE) and High Performance Liquid Chromatography (HPLC) with Hb Q-Thailand. As both diseases are quite rare in Malaysia, it can be misdiagnosed initially, leading to delayed diagnosis. *Case report:* We report 2 cases of rare hemoglobin variant in Malaysian population. Both cases diagnosed with Hb G-San Jose and Hb Q-Thailand based on the findings of CE, HPLC, and DNA analysis. We noticed that properties of Hb G-San Jose in CE and HPLC almost like Hb Q-Thailand. Both cases showed normal haemoglobin with hypochromic microcytic cells and high red blood cell count in peripheral blood count. By using CE, both cases showed Hb F co-migrated with Hb variants in zone 7. This might be a problem as the high Hb F conditions suggestive a differential diagnosis. While preceded with HPLC, both cases showed a peak at S window with retention time 4.48min (34.5%) and 4.59min (26.6%) respectively. *Conclusion:* Since other Hb variants may have a similar retention time to the common variant, thus combination of several methods need to be used to confirm the diagnosis. However, the definite identification of Hb variant detected by CE and HPLC still requires DNA analysis.

HM-03. Factors affecting autologous peripheral blood haemopoietic stem cell collection in non-Hodgkin lymphoma patient in Hospital Universiti Sains Malaysia

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Introduction: Autologous peripheral blood haemopoietic stem cell (APBSC) transplantation is a standard treatment for eligible high risk non-Hodgkin lymphoma (NHL) patients. The prerequisite for APBSC transplantation is the successful PBSC collection. This study is aimed to determine the factors that affecting PBSC collection in NHL patient at our center. **Materials & Methods:** Retrospective analysis of 55 NHL patients who underwent PBSC mobilization for 8 years was performed. Patients were mobilized with GCSF and etoposide or salvage chemotherapy (ICE) regime. PBSC collection were started when the PB CD34+ cell counts were ≥ 20 cells/ul. The CD34+ dose of $< 2 \times 10^6$, $2-5 \times 10^6$ and $> 5 \times 10^6$ cells/kg after a single mobilization procedure was considered unsuccessful, suboptimal and successful collection respectively. The analysed factors include patients' and disease characteristic, treatment and haematological parameters. Simple (SLR) and multiple logistic regression (MLR) analysis were used for statistical analysis and p value of < 0.05 was considered significant. **Results:** Majority of patients were Malay (92.7%), male (58.2%) and DLBCLs (54.5%) with the mean age of mobilization of 40.7 years. Only 47.3% of patients had successful PBSC collection. The only independent factor that significantly associated with successful PBSC collection was PB CD34+ cell count ($p=0.001$, OR=1.065, CI=1.026, 1.105). The other factors included the age, gender, race, weight, blood group, type of NHL, stage of disease, bone marrow infiltration, WBC count and number of chemotherapy cycles were not significant. **Conclusion:** PB CD34+ cell count was the only factor significantly correlated to CD34+ cell yield of collected PBSC in NHL patients and the result was consistent with previous study.

HM-04. The importance of two different laboratory methods for diagnosis of thalassemia and haemoglobinopathies: A case report of different diagnosis

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Introduction: The role of the laboratory investigation for the diagnosis of thalassemia and hemoglobinopathies is crucial. Nowadays, there are several methods are available for screening and detection of hemoglobinopathies in which two different methods are recommended for the diagnosis. **Case report:** We describe a 25-year-old primigravida woman, presented with symptomatic anemia at 31 weeks of gestation. She initially was diagnosed to have heterozygous hemoglobin (Hb) Q Thailand at another health center based on capillary electrophoresis findings; 74.8% of Hb at zone HbF, 22.3% of HbA and 2.5% of HbA₂ and Hb electrophoresis showed A₂, F and A band. Repeat Hb analysis was done since clinical presentation was not concordance with the initial diagnosis. Full blood picture showed hemoglobin of 8.8 g/dL with hypochromic microcytic indices and significant anisopoikilocytosis. Different method was used where by the high performance liquid chromatography (HPLC) showed HbA of 28.4%, HbF of 68.1% and HbA₂ of 3.5% with no abnormal peak and Hb electrophoresis revealed HbF, HbA and HbA₂ band. Based on those findings, the diagnosis of compound heterozygous Hb Malay/ β thalassemia or compound heterozygous hereditary persistence of fetal haemoglobin (HPFH)/ β thalassemia was considered. However full family study and molecular study required to confirm the diagnosis. **Conclusion:** In conclusion, this reported case showed that 2 different diagnosis were made due to different laboratory method used for diagnosis indicating that two laboratory methods with different principles is very important for accurate diagnosis of thalassemia and hemoglobinopathies to prevent missed diagnosis.

HM-05. Acquired hemophilia A in Kelantan: A recent two year cases series and review of literature

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Introduction: Acquired hemophilia A (AHA) is a rare acquired bleeding disorder caused by polyclonal immunoglobulin G autoantibodies against clotting factor VIII (FVIII). **Case report:** We reported six patients who presented with unusual bleeding episodes due to FVIII inhibitors. Most of them were elderly, except for 2 patients who presented at the age of 24 and 36. No direct or secondary caused was identified except for one case which developed 3 weeks postpartum. They presented with spontaneous bleeding into skin, muscles, and mucous membranes. FVIII activities were recorded between $< 1\%$ to 19%, while the inhibitor titre levels were between 3.9 BU to 340 BU; however, the titre level did not indicate the severity or frequency of bleeding among those patients. Platelet count, fibrinogen level and autoimmune disease screenings were normal. They responded well to immunosuppressive therapy. **Conclusion:** Autoantibody which neutralizes FVIII activity is the pathogenesis of AHA. Half of the cases are idiopathic while the other has well-established clinical associations with AHA (malignancy, autoimmune diseases

and pregnancy). Most of the patients present with spontaneous haemorrhages. AHA should be suspected when a patient without history of bleeding presents with bleeding and unexplained prolonged APTT. The diagnosis is confirmed by the reduction of FVIII levels and presence of FVIII inhibitor by specific haemostatic assay.

Kelantan data agrees with the estimated general prevalence of AHA and similar spectrum of clinical manifestations as described in literatures. High index of suspicion is required to provide better guidance in early diagnosis and management of this condition.

HM-06. The factors associated with successful autologous peripheral blood haemopoietic stem cell collection in Hodgkin lymphoma patient

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Introduction: Standard treatment for refractory and relapsed Hodgkin lymphoma (HL) patients is salvage chemotherapy followed by autologous peripheral blood haemopoietic stem cell (APBSC) transplantation. The prerequisite for APBSC transplantation is the successful PBSC collection. This study is aimed to identify the factors associated with successful PBSC collection in HL patients at our center. *Materials & Methods:* The data of 39 HL patients who underwent PBSC mobilization within 8 years was retrospectively reviewed. Patients were mobilized with GCSF and salvage chemotherapy (ifosfamide-carboplatin-etoposide, ICE) regime or etoposide. Leukapheresis were performed when the PB CD34+ cell counts were ≥ 20 cells/ul. We defined unsuccessful, suboptimal and successful collection based on the CD34+ dose of $< 2 \times 10^6$, $2-5 \times 10^6$ and $> 5 \times 10^6$ cells/kg respectively after a single mobilization procedure. Patients' and disease characteristics, treatment and haematological parameters were included for analysis. Pearson Chi-square and independent T-test were used for statistical analysis and p value of < 0.05 was considered significant. *Results:* Majority of patients were Malay (94.9%), female (61.5%), diagnosis of nodular sclerosis HL (53.8%) and have successful mobilization (59.0%) with the mean age of mobilization of 29.5 years. The only factors that significantly associated with successful PBSC collection was PB CD34+ cell count ($p=0.024$) The other factors included the age, gender, race, weight, WBC count, blood group, type of HL, stage of disease, bone marrow infiltration and number of chemotherapy cycles were not significant. *Conclusion:* PB CD34+ cell is the only factors that significantly associated with successful PBSC collection in HL patients and the result was consistent with previous study.

HM-07. An early presentation of acute promyelocytic leukaemia with abundant myelocytes stage leukaemic cells: A case report

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Introduction: Acute promyelocytic leukaemia (APML) is an oncologic emergency characterized by accumulation of clonal promyelocytes. Few cases of APML with unusual non-APML morphology but maintaining t(15;17) or PML-RAR α fusion gene reported. Here, we described an atypical manifestation of APML; presumably in early phase of the disease. *Case report:* Thirty-year-old man presented with 2-weeks history of prolonged fever, weight loss, hepatomegaly and lymphadenopathy. His hematologic parameters revealed Hb 8.5 g/dl, WBC $26.7 \times 10^9/L$ and platelet $137 \times 10^9/L$. PBF showed leucoerythroblastic blood film with few blast cells. Bone marrow aspirate and trephine biopsy showed hypercellular marrow with increase granulopoiesis and maturation arrest predominantly at myelocytes stage (60%) and 16% promyelocytes. Myeloperoxidase were strongly positive. Immunophenotyping (IPT) showed predominantly abnormal promyelocytes (80%) positive for MPO, CD117, CD13, CD33, CD64 and negative for CD34 and HLA-DR. Patient was started on ATRA followed by induction then consolidation. Molecular cytogenetic (FISH) revealed translocation t(15;17) (q24;q21) in 19 interphases (9%). *Conclusion:* Unusual presentations for APML observed were organomegaly and lymphadenopathy. Although this patient harboring a small percentage of t(15;17), a non-APML morphology of predominant myelocytes were observed. Limited reports of APML with atypical morphology described previously. In 2006, a case of PML-RAR α rearrangement associated with a three way translocation t(15;19;17) has been reported that display acute myeloid leukaemia (AML) with abundant myelocyte-stage leukaemic cells. Lesser amount of promyelocytic leukaemic cells and PML-RAR α fusion gene detected are likely due to early phase of the disease. Unusual presentation of APML include lymphadenopathy, hepatomegaly with marrow showing abundant myelocytes and low percentage of PML-RAR α fusion gene.

HM-08. Acute promyelocytic leukaemia in a six-year-old child: A case reportMuhammad Faiz MA¹, Nazri AM², Nizmah MM³¹Hospital Duchess of Kent, Sandakan, Malaysia, ²Hospital Duchess of Kent, Sandakan, Malaysia, ³Hospital Queen Elizabeth, Kota Kinabalu, Malaysia

Introduction: Leukemia is the most common malignancy of childhood representing about 30% of oncohematological diseases diagnosed in children less than 15 years of age. *Case report:* Here we are to report the case of a 6-year-old boy with acute promyelocytic leukemia whose blast showed morphology characteristic of acute promyelocytic leukemia. *Discussion:* The case is reported because Acute Promyelocytic Leukemia is very rare in childhood and its incidence accounts about 5-7% of all pediatric cases in acute myeloid leukemia. Moreover it represent a true oncohematology emergency in this case the laboratory has a significant role since the timing of the diagnosis is very short. It helps the management in which the introduction of All-Trans-Retinoic Acid (ATRA) has significantly reduced the early mortality.

HM-09. Data comparison of quantitative prothrombin time (PT)/INR between Siemens Xprecia Stride and Stago compact coagulation analyser

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Introduction: Fast and reliable point of care (POC) testing plays an important role in critical care medicine. The Xprecia Stride analyser is a handheld device that generates rapid, quantitative results intended for near patient monitoring of Prothrombin Time/International Normalized Ratio (PT/INR) from fresh finger prick blood samples. The aim of this study is to compare the PT/INR data between Xprecia Stride POC analyser against established laboratory haemostasis method (STAGO Compact Coagulation Analyser). *Materials and Methods:* A total of 63 study subjects comprising patients from PT/INR clinic were enrolled. Subjects provided first fresh blood drop sample from finger prick to Xprecia Stride analyser. Each subject also provided venous sample for PT/INR measurement using STAGO Compact Coagulation analyser. Results were distributed across INRs of 0.98–8.04 and used to perform a Linear Regression analysis. Slope $y=mx+c$ and coefficient of determination (R^2) were calculated. *Results:* Linear Regression analysis yielded a slope of 0.9835 and an intercept of +0.0072, with a coefficient of determination (R^2) of 0.9469 across the INR range of 1.0 to 8.0. *Conclusion:* Data comparison between the Xprecia Stride analyzer and the STAGO Compact Coagulation analyser demonstrated excellent correlation ($R^2=0.9469$) and a low bias at medical decision values (INR at 2.0 and 4.5).

HM-10. Haematological profiles of Filipino β -thalassemia/ HbE patients in MalaysiaLailatul Hadziyah Mohd Pauzy¹, Nur Aisyah Aziz¹, Ezalia Esa¹, Yuslina Mat Yusoff¹, Zubaidah Zakaria¹¹Hematology Unit, Cancer Research Centre, Institute for Medical Research (IMR), Jalan Pahang, 50588 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia

Introduction: The purpose of this study is to describe selected hematological indices among the patient with Filipino β -thalassemia/HbE compound mutations in Malaysia. *Methods:* Diagnostic data from the IMR thalassemia lab from the year 2016 were analyzed to choose for cases with Filipino β -thalassemia/HbE compound mutations. FBC counts and peripheral blood films (PBF) interpretation, followed by High Performance Liquid Chromatography or Capillary Electrophoresis were done at respective hospitals before peripheral blood sample in K3 EDTA tubes were sent to IMR for DNA analysis. Both α -thalassemia and β -thalassemia genotyping were performed using multiplex amplification refractory mutation system (MARMS) and multiplex Gap-PCR. *Results:* 12 patients were found to have Filipino β -thalassemia/HbE compound mutation. The age of diagnosis of thalassemia ranges from early infancy; at four months old, to 46 years old. Three of these patients are male and nine samples came from female patients. Their Hb ranges from 4.5 to 8.5g/dL ($\mu=7.76$, ± 1.14), MCV from 54.3 to 70fL ($\mu=60.3$, ± 4.89) and MCH from 16.3 to 22pg ($\mu=19.13$, ± 1.72). All the PBF were described as hypochromic, microcytic with many sample showing abnormal RBC morphologies. The HbA levels ranges from 0 to 5% ($\mu=3.03$, ± 1.26), HbF from 18.7 to 56.4% ($\mu=40.6$, ± 11.44), HbA2 from 36.2 to 68.8% ($\mu=49.54$, ± 9.35) of which HbE ranges from 33.3 to 60.6% ($\mu=45.74$, ± 9.98). *Conclusion:* Whilst the clinical features for patients with this mutation are very diverse, we found that they have very similar hematological profile. It is important to recognize this pattern of hematological parameters that should give rise to a high index of suspicion for this abnormality.

HM-11. Coombs negative autoimmune haemolytic anaemia: A diagnostic dilemmaVidyamalini R¹, Jubaida P¹, Roshariza H¹, Sureshkumar VK¹, Nurul IS¹¹Department of Pathology, Hospital Tuanku Ampuan Najihah, Kuala Pilah.

Introduction: Autoimmune haemolytic anemia (AIHA) is an uncommon disorder. A positive Coombs antiglobulin test is the diagnostic cornerstone for AIHA but 5-10% of these cases can be Coombs negative. We report a case of Coombs negative AIHA which poses a diagnostic challenge. **Case report:** A 65 years old Malay gentleman with underlying hypertension, diabetes mellitus and chronic kidney disease presented with fever, lethargy, failure symptoms and dark coloured urine. Initially he was treated as sepsis. However, patient's clinical condition deteriorated. His haemoglobin was noted to be low ranging 4-6g/dl despite transfusion. Full blood picture showed reticulocytosis of 32% and microspherocytosis. However, his Coombs test was negative. In view of patient's haemoglobin was persistently low with an increased bilirubin and lactate dehydrogenase and evidence of hemolysis in peripheral blood film, patient was treated as Coombs negative AIHA. He was started on steroids for which patient improved initially. However, patient succumbed due to upper gastrointestinal bleeding. **Conclusion:** Diagnosis of AIHA is usually based on low haemoglobin, features of haemolysis in peripheral blood film, increased bilirubin and lactate dehydrogenase and positive Coombs test. However, literature shows AIHA is still possible with a negative Coombs test. Hence, if clinical suspicion is high and a thorough investigation into non-immune causes has not yielded a valid cause, specialised tests is needed. In the absence of a positive Coombs test, the diagnosis and initiation of treatment of AIHA is delayed among clinicians. Early detection of Coombs negative AIHA is crucial to avoid morbidity and mortality.

HM-12. Listeriosis: Unusual cause of spur cell anaemia

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Introduction: Historically, spur cell anemia has been described with advanced alcoholic liver cirrhosis, but it can also be observed in other severe liver diseases. We demonstrate a case of reversible spur cell anemia due to invasive *Listeriosis* in a pregnant lady. **Case report:** A 31-year-old pregnant lady at 35 weeks period of gestation presented to a private hospital with fever, lethargy and diarrhoea prior to admission. An emergency Lower Section Caesarian Section (LSCS) was performed for foetal distress. Post operatively, she had septic shock with acute kidney failure and transferred to our facility for further management. Full Blood Count (FBC) showed severe anaemia with marked reticulocytosis, hence smear was performed, demonstrated marked acanthocytosis with occasional schistocytes suggestive of spur cell anemia. Extensive blood tests done showed evidence of acute liver and renal failure. Blood Culture and Sensitivity (C&S) from the periphery by private medical laboratory grew *Listeria monocytogenes*. Early treatment initiated was tailored towards Thrombotic Thrombocytopenic Purpura (TTP)/Haemolytic Uraemic Syndrome (HUS). She was commenced on several types of antimicrobials, underwent few cycles of plasma exchange and dialysis for Acute Kidney Failure. Serial Liver Function Test (LFT) and renal profile monitoring showed improvement, followed by the disappearance of acanthocytes on the serial FBP after 5 days of admission. **Conclusion:** It was not easy to diagnose spur cell anemia especially in those who do not have underlying liver pathology. This case demonstrates that high index of suspicion need to be exercise whenever deranged LFT parameters co-exists with marked acanthocytes.

HM-13. A descriptive analysis prothrombin time (PT) clot waveform analysis of patients on warfarin therapy

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Introduction: The optical method of coagulometer has an extra advantage over mechanical method by providing the clot waveform analysis (CWA) during the dynamic of clotting process. So far, the clot wave pattern and its relationship with warfarin therapy has not been explored in details. CWA is based on the continuous monitoring of light absorbance during the clot formation. The changes in light absorbance are analysed by continuous measurement and are designated the clot waveform. It has been applied for diagnosis and evaluation of sepsis and inherited bleeding disorders such as haemophilia. However, not much study for patient on warfarin. **Aim:** To study PT CWA pattern among patients on stable warfarin treatment. **Methods:** This is a preliminary study that analysed fourteen samples from patients on warfarin by using ACL TOP 300 coagulation analyser. CWA was automatically constructed by plotting changes in light absorbance against time. This CWA was then interpreted and evaluated. **Results:** From fourteen samples, all samples showed prolonged APTT (range from 15.0s to 49.8s) and prolonged INR (range from 1.4 to 4.6). From the plotted curve there were prolongation of baseline phase that showed increased amount of time taken to activate the coagulation cascade up to production of thrombin. During acceleration phase, noted shallower slope indicating slow clot formation. There were reduction of delta change with prolongation of INR. **Conclusion:** CWA may give predictive value of bleeding tendencies in patients with prolonged INR. PT CWA parameters associated with warfarin sensitivity and correlation with INR is potentially useful. Future study to confirm this preliminary finding is suggested.

HM-14. Evaluation of the destiny max coagulometer in Haematology unit, Department of Pathology, Hospital Kuala Lumpur (HKL)

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Introduction: Destiny Max is a fully automated high throughput coagulometer with unique features of dual technology options of clot detection (mechanical and optical clot detection). We conducted an evaluation study to look at the performance of the analyser. The evaluated coagulation tests include Prothrombin Time (PT), Activated Partial Thromboplastin Time (APTT), Fibrinogen assay and D-Dimer. The evaluation protocol was based on the latest Clinical and Laboratory Standards Institute (CLSI) Guidelines. It was conducted during a month duration and both mechanical/optical clot detection methods were evaluated. **Materials and methods:** The performance evaluation includes the precision, linearity, carryover of reagent and sample, establishment of reference intervals, INR verification, on-board stability and correlation study. **Results:** The within-run and between-run coefficients of variation (CV) for all the evaluated coagulation tests were within the manufacturer's claim. Fibrinogen has good linearity in the range of 180 mg/dl to 884mg/dl (mechanical) and 113mg/dl to 946mg/dl (optical). No significant carryover of sample and reagent has been detected. Reference intervals for PT and APTT were established from healthy donors using both methods (optical and mechanical): PT (optical): 11.8 – 14.1 seconds, APTT (optical): 23.6 – 37.2 seconds, PT (mechanical): 12.3 – 14.2 seconds, APTT (mechanical): 25.6 – 37.5 seconds. There was a good correlation seen between the evaluated coagulometer and the currently used analyser in HKL (ACL Top CTS 500); ($R^2 > 0.95$). Evaluation of the reagents showed good on-board stability as for the manufacturer's claimed duration. The success of the conducted INR verification study has verified the efficiency of PT/INR system of the coagulometer. **Conclusion:** Our local evaluation of basic coagulation tests on Destiny Max automated coagulometer verified its outstanding performance. The unique dual technology of clot detection adds distinctive value to its analytical performance.

HM-15. Haemophagocytic lymphohistiocytosis: A fatal syndrome that needs urgent recognition – A case series

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Introduction: Haemophagocytic lymphohistiocytosis (HLH) is a potentially fatal clinical syndrome. Acquired HLH can be activated by exogenous agents such as infectious organisms, collagen-vascular diseases or malignancy. We reported three cases of acquired HLH that presented with cytopenia and severe sepsis. **Case report:** Case 1: A 70-year-old man presented with fever, vomiting and pancytopenia. Blood investigations showed remarkably high serum ferritin (23,168 ug/L), raised serum triglyceride, with raised tumour marker (CA 19-9). Bone marrow (BMA) examination showed increased in haemophagocytic activity. Patient was initially treated with steroids while investigating for secondary cause of HLH (malignancy) and discharged well. However he presented again after one month with severe pancytopenia and succumbed due to severe sepsis. Case 2: A 54-year-old lady presented with prolonged fever, splenomegaly, multiple shotty lymphadenopathy and bicytopenia with very high serum ferritin of 12,471.2 ug/L. BMA showed remarkable haemophagocytic activity. She was treated with modified HLH protocol and discharged well. However, she presented again after a month with severe sepsis and succumbed to the disease. Case 3: A 15-year-old female with SLE admitted for sepsis and pancytopenia. She remained severely thrombocytopenic with evidence of bleeding despite receiving multiple platelet transfusions, IV methylprednisolone, IV immunoglobulin and plasmapheresis. Her serum ferritin level was raised of >1650 ug/l. Bone marrow showed evidence of haemophagocytosis. However, she succumbed due to severe meliodosis infection. **Conclusion:** These three cases illustrates that the disease is not uncommon as it is always thought. Thus, high index of clinical suspicion, appropriate and prompt investigations and treatment is crucial to improve morbidity and mortality.

MM-01. Detection of respiratory syncytial virus and adenovirus by shell vial culture technique

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Introduction: Respiratory Syncytial viruses (RSV) and Adenovirus cause various human infections ranging from trivial to life threatening infections. The gold standard method for detection of these viruses is cell culture with immunofluorescence staining. But this conventional method still has limitation in long turnaround time (TAT), dependent on specimen quality, transport and incubation conditions in maintaining the infectivity of virus. In this study we use shell vial technique for detection of Adenovirus and RSV with aim to improve TAT and sensitivity of viral culture. **Materials & Methods:** Viruses stock titre were quantified by TCID50 and inoculated in separated shell vials seeded with continuous human laryngeal carcinoma (HEp-2). Shell vials were centrifuged at 1800 rpm for 30 minutes and incubated at 37°C with presence of 5% of CO₂. Infected cells were observed for cytopathic effect (CPE) daily and harvested from the shell vial. Viruses were detected by immunofluorescence. This step was

repeated three times with different Multiplicity of infection (MOI); MOI 0.5, 1 and 5. *Results:* Cytopathic effect (CPE) for Adenovirus and RSV infection appeared as early as at 24 hours and 48 hours post of infection by MOI 5. Immunofluorescence staining confirmed that Adenovirus and RSV at three different MOI 0.5, 1 and 5 can also be detected within 48 hours. *Conclusion:* Shell vial technique can detect viruses at low concentration and shorten the virus detection period to 1-2 days compared to conventional method that take 3-14 days. Reduction of TAT and provision of rapid diagnostic result will lead to expedited clinical decision making and improvement in the management of the patients.

MM-02. Invasive carbapenem resistant Enterobacteriaceae infection: A case series and genotyping profiling

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Introduction: Carbapenem resistant *enterobacteriaceae* (CRE) can be divided into carbapenamase and non-carbapenamase producing *enterobacteriaceae*. Carbapenamase producing *enterobacteriaceae* (CPE) are associated with higher mortality rates and morbidity. The aim of this study is to determine genotypic profiling of four clinical isolates from CRE infection in our center. *Methods:* Four confirmed clinical isolates of CRE infection by phenotypic method in our centre was chosen and DNA extraction was done. Simultaneous detection of *bla*_{NDM-1}, KPC, OXA-48, VIM and IMP was carried out on these clinical isolates using a commercial multiplex real-time PCR detection of carbapenamase genes. Clinical outcome of each patient was determined retrospectively based on review of the clinical records. *Results:* Age of the patients included in this study ranging from 3 months to 71 years of age. They shared common risk factors for CRE such as prolonged hospital stay, multiple antibiotic therapy, underlying comorbidities and immunocompromised state. None of our patients had received carbapenem antibiotic prior to isolation of the CRE. Genotyping profiling revealed *bla*_{NDM-1} for all cases. None of them received definitive treatment for CRE infection which consist of Polymyxin B combination therapy. Three patients survived and one succumbed to death. *Conclusion:* NDM-1 was the only genotype detected in these patients. Poor outcome is seen in immunocompromised patients.

MM-03. Prevalence and distribution of Oxa-48 Carbapenem-Resistant Enterobacteriaceae in Universiti Kebangsaan Malaysia Medical Centre

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Introduction: OXA-48, a carbapenem-hydrolysing class D β -lactamase, is increasingly reported worldwide. The aim of this study was to describe the prevalence and distribution of OXA-48 carbapenem-resistant *Enterobacteriaceae* (CRE) in Universiti Kebangsaan Malaysia Medical Centre (UKMMC). *Materials & Methods:* *Enterobacteriaceae* isolates from all clinical specimens with reduced susceptibility to at least one carbapenem were subjected to molecular detection of the *bla*_{OXA-48} gene by real-time polymerase chain reaction. *Results:* Out of 13,098 *Enterobacteriaceae* isolates screened between January 2011 and December 2012 in UKMMC, 87 (0.66%) demonstrated reduced susceptibility to at least one carbapenem. Of these, 9 (10.34%) were positive for OXA-48; 7 were *Klebsiella pneumoniae* and 2 were *Escherichia coli*. The majority of isolates were detected from urine (n=3). All 9 isolates were positive for the modified Hodge test and were resistant to ertapenem, with variable susceptibility towards meropenem, imipenem, and doripenem. Each isolate originated from different patients, 3 of whom had underlying hematological malignancy and presented with complications of their disease. Of the 9 patients, 4 died (44%, including 2 with hematological malignancy) and 5 were discharged. All 9 patients had history of treatment with at least one cephalosporin and/or carbapenem prior to the isolation of OXA-48 CRE. *Conclusion:* The prevalence of OXA-48 CRE among all *Enterobacteriaceae* isolates in UKMMC was 0.069%. The high mortality rate may or may not be attributable to OXA-48, as other confounding factors may have contributed to the patients' deaths. Nevertheless, our findings suggest that OXA-48 carbapenemase appears to be an important and possibly under-recognized cause of carbapenem resistance in Malaysia.

MM-04. Chronic granulomatous disease in Malaysia: Review of data from Malaysia primary immunodeficiency network (MyPIN) registry

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Introduction: Chronic granulomatous disease (CGD) is genetic disorder that resulted in the defect of an enzyme known as NADPH oxidase that mainly present in phagocytes. NADPH oxidase consists of 5 proteins subunit namely gp91^{phox} and p22^{phox} (membrane bound); p47^{phox}, p67^{phox} and p40^{phox} (cytosolic). The disease is inherited either by X-linked or autosomal recessive. The aim of

this study is to describe the demographic and clinical manifestations of CGD in Malaysia. *Materials & Methods:* We reviewed the data from the Malaysia Primary Immunodeficiency Network (MyPIN) that included cases of CGD diagnosed from 1991 until 2016. The cases were all referred to immunologists and the data were mainly entered by the immunologists who managed the case. *Results:* Initially there were 15 cases classified as CGD. After the review, only 14 cases were diagnosed as CGD. The other case was removed because of duplicate entry. From the 14 patients, 9 were male (64.3%). The mean age of diagnosis was 54.5 months. In six patients (42.9%), family history of underlying primary immunodeficiency (PID) were discovered. Skin infections/abscess was the main clinical presentations in 9 patients followed by lung infections (n=8) and liver/spleen abscess (n=6). Catalase-positive bacteria were the most commonly isolated pathogen with *Chromobacterium violaceum* was the most predominant bacteria isolated. *Chromobacterium violaceum* bacteremia contributed to high mortality among CGD patients. *Conclusion:* CGD in Malaysia was diagnosed at the mean age of 54.5 months that is not far from CGD diagnosed in many other countries. CGD in Malaysia is predominantly diagnosed in male probably indicating X-linked is the main mode of inheritance.

MM-05. Incidence of syphilis in a teaching hospital in Malaysia

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Introduction: Syphilis is an infectious disease caused by spirochete, *Treponema pallidum* subsp *pallidum*. The infection is mainly transmitted by sexual contact. Recent outbreaks have been linked to HIV epidemic and men sex with men (MSM) practices. Serology is the main laboratory diagnosis for the infection in Malaysia. The purpose of this study is to determine the incidence of syphilis from the routine screening samples that were sent to our centre. *Materials & Methods:* We conducted a retrospective study looking at serology test for syphilis sent to our laboratory for screening and confirmation throughout 2016. In our laboratory, samples reactive for screening laboratory test by rapid plasma reagin (RPR) were routinely confirmed by Syphilis IgM (Immunoblot) and IgG (ELISA). *Results:* Throughout 2016, 4701 samples were screened for syphilis. 124 samples were reactive RPR. Out of 124 samples, Syphilis IgM/IgG were done only on 54 samples. The remaining samples were monitoring samples for those already diagnosed with syphilis and on treatment. In the end, only 38 patients were diagnosed with syphilis with positive Syphilis IgM or IgG. Thus, the incidence rate of syphilis was 0.8%. For the syphilis cases, the age of the patients range between 24-78 years. Thirty patients were male (78.9%). Twenty-four of male patients were HIV-positive (80%). All female patients were HIV-negative. RPR titer ranges from 1:1 to 1:1024. Patients with HIV were more likely to have RPR titer of 1:8 and above than those without HIV ($p=0.007$). *Conclusion:* The incidence of syphilis in this study was at 0.8% which is considered as low. Syphilis was predominantly diagnosed in male and most of them were co-infected with HIV.

MM-06. Molecular diagnosis of culture-negative melioidosis: A case report

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Introduction: Melioidosis, caused by *Burkholderia pseudomallei* is an important infection that requires high clinical suspicion for diagnosis. Current gold standard, the culture method suffers from low sensitivity, time-consuming and the identification require experienced laboratory technician. *Case report:* We described a qPCR-positive, culture-negative melioidosis in a 55 years old Malay retiree, male with underlying risks factors including diabetes mellitus and hypertension. qPCR was able to detect *B. pseudomallei* on the day of patient admission, hence enable early initiation of appropriate treatment. Culture of clinical specimen remained negative for *B. pseudomallei* throughout patient hospitalization. *Discussion:* This case highlights the significant role of qPCR for early and sensitive method for detecting *B. pseudomallei*, as compared to the culture method.

MM-07. Prevalence of hepatitis B surface antigen and antibody among UNIMAS medical and nursing students who received hepatitis B vaccination in infancy

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Introduction: There has been a steady decline in the seroprevalence of HbsAg in Malaysia after the introduction of nationwide universal HBV vaccination for newborn in 1989. The objectives of this study were; (1) to investigate the antibody levels (anti-HBs) and the prevalence of HBsAg among the new medical and nursing students, and (2) to evaluate the immune response to a booster dose of hepatitis B vaccine among those with anti-HBs <10 IU/L. *Methods:* All new medical and nursing students from

2011 to 2016 were screened for HBV infection. Serum samples collected were tested for the presence of HbsAg and anti-HBs with the use of fully automated analysers. Students who were anti-HBs negative were given a booster dose of hepatitis B vaccine and the levels of anti-HBs were determined 30 days after the booster dose. Students who were still anti-HBs negative were given a second booster at 1 month after the first booster and a third booster at 3 months after the second booster. Anti-HBs levels were redetermined 30 days after the third booster. **Results:** The prevalence of HBsAg among 769 students was 0.4% (3/769). Only 23.4% had protective levels of anti-HBs. Among those given booster, 83% were anti-HBs positive, with titres of 542.0 ± 896 IU/ml (median \pm interquartile range). 92.6% of those who received third booster were anti-HBs positive. **Conclusion:** The prevalence of HBsAg (carrier) among the medical and nursing students was very low (0.4%). This is due to the success of the infant vaccination programme. The prevalence of anti-HBs after age 19 – 20 years was low (23.4%). The question that remains to be answered is how long immune memory will last.

MM-08. A preliminary finding of anti-M-type-phospholipase-A2 receptor antibodies in Malaysian patients with suspected membranous nephropathy

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Introduction: Membranous nephropathy is one of the common causes of nephrotic syndrome initiated by deposition of immune complexes and activation of complement system at glomerular basement membrane. The M-type-phospholipase-A2 receptor (PLA2R) of podocyte in kidney has been identified as a major target of the autoantibodies found in patients with idiopathic membranous nephropathy. However, the prevalence and diagnostic value of anti-PLA2R among Malaysia population with membranous nephropathy is unclear. **Methods:** This preliminary study consists of serum samples from 28 patients from government hospitals in Malaysia who were suspected membranous nephropathy by the nephrologist. Twenty one of them had histological finding of membranous nephropathy. Presence of serum anti-PLA2R antibodies were measured by enzyme-linked immunosorbent assay (ELISA) conducted in Allergy & Immunology Research Centre, Institute for Medical Research. **Results:** Among all patients, anti-PLA2R antibodies were detected in 9 patients (32.1%) which were 100% correlated with their histological findings of membranous nephropathy. Over the period of study, multiple reading of anti-PLA2R antibodies were determined from 5 patients at different time. Reduction of anti-PLA2R antibodies level were observed in 3 patients who received treatment after the diagnosis. **Conclusion:** The preliminary study revealed that anti-PLA2R antibodies were detected in patients with confirmed histological findings of membranous nephropathy. This finding strengthen the importance on utilization of anti-PLA2R antibodies as a non-invasive method for the diagnosis of membranous nephropathy.

MM-09. Prevalence of Methicillin-Resistant Staphylococcus aureus amongst nursing students of Universiti Kebangsaan Malaysia Medical Centre

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Introduction: The increasing trend of methicillin-resistant *Staphylococcus aureus* (MRSA) infection due to increasing carriage rate among healthcare workers has been identified. MRSA infections has higher mortality and treatment failure compared to methicillin-sensitive *Staphylococcus aureus* (MSSA). Hence screening for carriers is an important measure to curb its transmission. **Objective:** This study aimed to determine the prevalence of MRSA amongst nursing students of UKMMC and its association with year of study, current clinical posting, duration of posting and knowledge on universal precautions affecting colonization rate. **Methods:** This cross-sectional study was done on 103 nursing students of UKMMC by distributing informed consent form and questionnaire. Swab taken from both anterior nares was inoculated onto mannitol salt agar and incubated at 37 °C for 24 to 48 hours. Yellow colonies tested positive for DNase and coagulase tests were confirmed as *Staphylococcus aureus* and susceptibility of these isolates were tested against cefoxitin. Zone of inhibition of equal or less than 21mm indicates resistance towards methicillin, confirming MRSA. Socio-demographic data, risk factors and knowledge were obtained from the questionnaire. **Results:** Fifty isolates (32%) were non-staphylococcal, 33 (48.5%) were coagulase-negative *Staphylococcus aureus*, 20 (19.4%) were MSSA. No MRSA isolated. The prevalence of MRSA nasal carriage amongst nursing students of UKMMC is 0%. However, 19.4% of them were colonized by MSSA which corresponded with the normal rate in general population. **Conclusion:** Therefore, nursing student is not a significant carrier of the MRSA in clinical setting. There is also no increased risk of MSSA colonization amongst UKMMC nursing students.

MM-10. Prevalence of staphylococcus aureus nasal carriers and factors associated with staphylococcus aureus colonisation among medical students in a teaching hospital in Malaysia

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Introduction: Medical students are at potential risk of being colonized by SA and becoming the source of its spread to patients. This study aimed to determine the prevalence of SA nasal carriers and the association of sociodemographic factors and medical history with SA colonization among medical students in our centre. **Materials and methods:** In this cross-sectional study, a total of 237 nasal swabs were collected from first and fifth year medical students. After inoculation on mannitol salt agar, yellow colony growth was observed at 24 and 48 hours of incubation at 37°C. Colonies were identified as SA by a positive coagulase and DNase test. Antimicrobial susceptibility testing against cefoxitin was performed using disk diffusion method. A questionnaire on sociodemographics and risk factors of nasal colonization was collected. **Results:** Thirty-six students (15.2%) were SA nasal carriers. Sixteen and 20 isolates were isolated from first and fifth year students respectively. No significant association was found between studied sociodemographic factors with SA nasal colonization. Three isolates from fifth year students were methicillin-resistant, resulting in a prevalence of nasal methicillin-resistant *Staphylococcus aureus* (MRSA) carriage of 1.3%. **Conclusion:** The prevalence of SA nasal carriers was comparable to the general population. No association was found between studied risk factors with SA colonization, suggesting no increased risk of SA colonization among medical students in hospital settings. Importance of infection control measures could not be overemphasized enough despite the low prevalence of MRSA nasal carriage.

MM-11. *Rhodococcus equi* gastroenteritis with bacteraemia: A case report

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Introduction: *Rhodococcus equi* is an emerging opportunistic pathogen especially in immunocompromised patients. We report a rare case of *Rhodococcus equi* gastroenteritis with bacteraemia in a 31-year-old newly diagnosed HIV-positive man with underlying diabetes and hypertension. **Case report:** Patient was referred from a private hospital with a 2-week history of diarrhoea, fever and cough. Clinical examination revealed right lung basal crepitations with no other abnormalities detected. Both blood and stool cultures isolated pure growth of gram-positive coccobacilli, exhibiting salmon-pink colonies on blood agar. Confirmation of identification with API CORYNE revealed *Rhodococcus equi* (94%) with a positive CAMP test. The organism was sensitive to erythromycin, gentamicin, vancomycin and rifampicin but resistant to cotrimoxazole, clindamycin, oxacillin and fusidic acid. However, no sputum was sent for culture. Patient was subsequently covered with rocephine, azithromycin and ciprofloxacin. **Conclusion:** *Rhodococcus equi* as a cause of gastroenteritis in HIV-positive patients presenting with persistent diarrhoea should be considered. Although pulmonary co-involvement could not be confirmed in this patient, recognizing other potential sources of infection such as the alimentary tract is equally important to improve laboratory identification of this organism since it may often be misidentified as other organisms with similar characteristics and regarded as contaminants or normal flora. Importance of communicating the clinical setting of infection-suspected patients to the laboratory in order to facilitate identification of this organism could not be overemphasized.

MM-12. Identification of *Proteus* spp: Comparison between 2 methods

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Introduction: *Proteus* species are implicated as serious causes of various human infections. The genus *Proteus* currently consists of *P.mirabilis* (accounts for vast majority of clinical isolates); *P.penneri*; *P.vulgaris*; *P.myxofaciens*; *P.hauseri*; and three unnamed genomospecies (*Proteus genomospecies 4, 5, and 6*). The aim of the study was to compare between routine biochemical test with VITEK® 2 GN ID card (bioMe'rieux, Marcy-l'Etoile, France) for *Proteus* species identification. **Materials & Methods:** A total of 204 *Proteus* isolates were collected from routine samples. All isolates were identified by using a set of biochemical tests and VITEK® 2 GN ID card. The biochemical tests include: triple sugar iron (TSI), motility, indole, ornithine (MIO), citrate, methyl red, phenylalanine deaminase (PD), oxidative fermentation (OF), urea test, malonate. **Results:** The *Proteus* species identified by VITEK® 2 GN ID card include *P.mirabilis* (n=194); *P.penneri* (n=7); *P.vulgaris* (n=1) and *P.hauseri* (n=2). The biochemical tests were able to identify similar *Proteus* species in 82.8% of the isolates. However, biochemical tests were not able to identify *P.hauseri*. **Conclusion:** *P.mirabilis* is the most common *Proteus* species isolated from clinical samples. The set of biochemical tests used in this study is able to identify most of the *Proteus* species isolated. This is a good and cheaper alternative for *Proteus* species identification.

MM-13. Description of vancomycin susceptibility testing in patients infected with Methicillin-resistant *Staphylococcus aureus* (MRSA)

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Introduction: Vancomycin has been the mainstay of treatment for decades in patients with methicillin-resistant *Staphylococcus aureus* (MRSA) infection. However, the value of MIC vancomycin of $\leq 2\mu\text{g/ml}$ despite appearing sensitive when tested in the laboratory are being associated with treatment failure. Here we describe the value of vancomycin minimum concentration inhibition (MIC) against Methicillin Resistant *Staphylococcus aureus* (MRSA) in our clinical training centre (CTC). **Methods:** A retrospective data collection of patients admitted to the CTC in 2016-2017 who grew MRSA in their microbiological specimens with a documented MIC to vancomycin were analyzed. The MRSA were grown in a standard microbiological method and identified by using Vitek 2. The MIC was determined by using E test. **Results:** A total of 36 MRSA were isolated from 16 patients admitted to the CTC. There were 19, 8, 5, and 4 MRSA isolates had their MIC of ≤ 0.5 , 1, 1.5 and $2\mu\text{g/ml}$ respectively. All MIC falls within the sensitive range. **Conclusions:** Since a high vancomycin MIC of $2\mu\text{g/ml}$ has been observed, it is important to increase the monitoring of patients' clinical response towards vancomycin and active measures should be taken to prevent further spread of this disease.

MM-14. Distribution of fungal isolates in new established clinical training centre, Malaysia

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Introduction: Current epidemiology revealed that there was diversity in distribution of fungal isolates from one centre to another, as it may influence the clinical practice in the management of mycoses. This study was undertaken to describe the distribution of fungal isolates in the new clinical training centre, Malaysia. **Materials and Methods:** Ninety-three fungal isolates from 92 specimens were detected on both sabouraud dextrose agar and brain heart infusion media from January 2014 to March 2017. Identification of all isolates was performed by assessment of its colonial morphology, microscopy examination and VITEK-2. **Results:** Majority of the fungi were isolated from nail (n=32; 34.7%) followed by skin scrapping, blood, bronchioalveolar lavage and tissue biopsy respectively [31 (33.7%), 13 (14.1%), 13 (14.1%) and 3(3.26%)]. Commonly isolated fungi were consists of non-albicans candida followed by *Candida albicans*, *Fusarium* spp., *Trichophyton* spp., *Aspergillus* spp., *Trichosporon* spp., and *Cladosporium* spp. [19; (20.4%), 16 (17.2%), 15 (16.1%), 10 (10.8%), 9 (9.67%), 6 (6.45%), and 5 (5.37%)]. *Sporothrix schenckii*, *Rhizopus* and *Penicillium* spp. contributed 2.15% each of the isolated fungi while, *Verruconis gallopava*, *Cryptococcus laurentii*, *Bipolaris* spp., *Curvularia* spp., *Acremonium* spp., *Chaetomium* spp., and *Microsporium* spp. added only 1.07% to the distribution. **Conclusion:** *Candida albicans* remains the most common isolated fungi followed by *Fusarium* spp. and *Trichophyton* spp. All three isolates were mainly isolated from blood, skin scrapping, and nail. Emphasis on the need to have continuous surveillance regarding distribution of fungal isolates need to be carried out, as these will provide a resourceful information on the commencement of empiric antifungal therapy.

MM-15. Candidaemia and antifungal susceptibility testing: A description from a new clinical training centre, Malaysia

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Introduction: Antifungal therapy is a critical component especially in managing opportunistic candida infection in immunocompromised group of patients. Emergence of antifungal resistance, particularly among *Candida* species, aggravates the problem. This study was aimed to describe the distribution of candida isolates obtained from blood and its antifungal susceptibility testing in the new clinical training centre, Malaysia from January 2014 to March 2017. **Materials and Methods:** Identification of all isolates was performed by assessment of its colonial morphology, germ tube test, microscopy examination and VITEK-2. Susceptibility testing was performed using sensititre broth microdilution method containing amphotericin B, itraconazole, fluconazole, voriconazole, posaconazole, anidulafungin, caspofungin, and micafungin. The minimum inhibitory concentration was determined based on the breakpoint by Clinical Laboratory Standards Institute. **Results:** There were 14 isolates of *Candida* species isolated from blood with majority of isolates (n=12; 85.7%) were identified as *Candida albicans*. The remaining were *Candida tropicalis* (n=1; 7.14%) and *Candida glabrata* (n=1; 7.14%) respectively. **Conclusion:** Susceptibility testing showed that all *Candida albicans* and *Candida tropicalis* were sensitive to tested azoles, amphotericin B and echinocandins. While *Candida glabrata* isolate was resistant to all tested azoles, anidulafungin and caspofungin, however it remains susceptible towards micafungin and amphotericin B. *Candida albicans* is the most commonly isolated *Candida* species from the blood,

and remains susceptible to azoles, however emergence of azole and echinocandin resistant *Candida glabrata* isolate is evident in our centre that may results into limited choice of empiric antifungal therapy.

TM-01. Discrepancy in ABO blood grouping: Hospital Universiti Sains Malaysia's experience from January 2010 to May 2017

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Introduction: Accurate ABO grouping is an essential part of pretransfusion testing in transfusion practice as ABO incompatibility is a significant cause of transfusion related morbidity and mortality. This study is aimed to determine the rate and causes of ABO discrepancies in our center. *Materials and Methods:* Retrospective analysis of all ABO grouping from January 2010 to May 2017 in our center in which ABO blood grouping were detected serologically using microcolumn gel agglutination method from Diamed-ID micro typing system by 2 different lab personnel. ABO discrepancies was defined when there was discordant result between forward /cell and reverse /serum grouping. *Results:* The prevalence of ABO discrepancies was 0.03% (85 cases) out of 252 000 ABO grouping over the 7 years. The most common types of ABO grouping discrepancies observed was type IV 64 cases (75.3%), and followed by type III, 10 cases (11.7%), type II 7 cases (8.2%) and type I 4 cases (4.7%). The most common causes of ABO discrepancies were non-specific proteins/panagglutination (31.7%) and followed by autoantibodies (25.8%), naturally occurring alloantibodies (17.6 %), Rouleaux formation of RBC (11.8%), subgroups (8.4%) and neonate/elderly (4.7%). *Conclusion:* Although the rate of ABO discrepancies was very low, it is very important and crucial to recognize discrepant results and resolve them. Correct blood typing are essential to prevent ABO incompatibility.

TM-02. Stability of coagulation factors and sterility of thawed fresh frozen plasma stored at 4°C

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Introduction: National Guidelines recommended that FFP should be transfused immediately after thawing to prevent microbial contamination and minimize lost of labile coagulation factors. There is no recommendation on the stability of thawed FFP if not used. This study aimed to evaluate the stability of representative coagulation factors (FII, FVIII and fibrinogen) and sterility of thawed FFPs kept at 4°C up to 5 days. *Methods:* 30 units of FFPs were collected by apheresis from healthy donors and stored at -20°C. Batches of 5-8 units of FFP were thawed and stored at 4°C for day 5. Coagulation factor activities were measured by clotting assays at 4 different time points; immediately after thawing (day 0), 6 hours, day 3 and day 5. Sterility tests were also performed at day 0 and at day 5. *Results:* The FII activities at the 4 time points were 73.43%, 73.73%, 71% and 69.8% while the fibrinogen levels were 3.24g/L, 3.24g/L, 3.21g/L and 3.20g/L respectively. The mean % reductions were -1% to 5% and 0% to 1% and were not statistically significant. However, the mean FVIII activities were 177.63%, 144.37%, 80.8% and 70.97%; the mean % reductions were statistically significant on day 3(30%) and day 5(40%). (p<0.05). All samples were free from microbial contamination throughout the study period. *Conclusion:* The labile FVIII activity decreased significantly from post-thaw day 3 onwards with the FVIII activity on day 5 remaining above >70%, and still sterile being stored at 4°C. We would like to suggest that thawed FFPs may still be efficient and safe for transfusion up to 5 days if stored properly at 4°C.

TM-03. Prevalence of HIV infection and identified risk factors among blood donors in North-Eastern tertiary hospital

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Introduction: Although risk of transfusion-transmitted infections today is lower than ever, the supply of safe blood products remains subject to contamination with human pathogen. The objectives of the study were to determine the prevalence of HIV infection among blood donor in North Eastern tertiary hospital and to identify risk factors contribute to HIV. *Materials and Methods:* Retrospective data were collected from HUSM blood donor registry system for 10 years starting from 2008 until 2017. The data collected included gender, age, occupation, number of donations and risk factors. Screening for HIV infection was done using ELISA and confirmed by Western blot. *Results:* A total of 105486 blood donors donated from 2008 until July 2017 with 0.13% (133 cases) were reactive for HIV screening. Of this, only 23 cases were confirmed positive by Western Blot. 19 cases were male and remaining were female. Majority of the cases aged from 18 – 39 years old. From 2008 until 2011 the risk factor identified for HIV-positive was promiscuity (50%), homosexuality (12.5%), intravenous drug use (12.5%) and unknown cause (25%). From 2012 until 2017, homosexuality (46.7%) predominated more compared to promiscuity (40%). No positive cases from intravenous drug use detected. The HIV infection is more frequently seen among repeated blood donors (60.8%) compared to first time blood donors (39.2%). *Discussion:* The prevalence of HIV infection among blood donors is small. The risk factor identified showed the changing in trends toward homosexuality for the past 5 years among the younger aged blood donors, similar to the risk factors of HIV infection among Malaysian general population.

TM-04. Rh-D phenotype in a primigravida patient causing haemolytic disease of foetus and newborn to baby: A case report

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Introduction: Rh -D- is an unusual phenotype in Rh blood group system, lacking all Cc or Ee antigens but demonstrates a stronger D-antigen expression. We describe an extremely rare Rh-D- primigravida with first baby affected with haemolytic disease of foetus and newborn (HDFN). *Case report:* Patient was a 20-year-old pregnant lady, presented in active labour with foetal distress and planned for emergency caesarean section. Group screen and hold was requested and showed her blood group as A RhD positive, with positive antibody screening. Antibody identification demonstrated multiple antibodies. Rh genotype showed no C/c and E/e antigen reactivity but strong D antigen suggesting -D-/-D-. Adsorption and elution revealed presence of anti-Ce, and anti-cE alloantibodies by the reference laboratory. Crossmatch was incompatible with all grouped A RhD positive units. The management of such patient is extremely difficult due to the limited availability of -D- donor. The reference laboratory has one unit of frozen -D- blood ready for used if indicated. Fortunately, the patient underwent caesarean-section with haemoglobin of 13g/dl and the procedure went on well without any complication. The baby developed jaundice at day-2. She was grouped as A Rh-Dpositive and the probable Rh genotype (CDe/-D-). DCT was positive and eluate showed multiple antibodies of identical reactivity as the mother. Total-bilirubin:134.1umol/l and Direct-bilirubin:7.6umol/l. The baby was managed with phototherapy. *Conclusion:* The Rh-D- haplotype is a rare condition. Clinically Rh-D- phenotype in pregnant women can cause mild to fatal HDFN. Routine antibody screening in all pregnant women helps to arrange the rare blood and thus prevent the maternal and infant morbidity.

TM-05. Severe haemolytic disease of foetus and newborn (HDFN) of Rh-D negative mother due to anti-D alloantibody causing intrauterine death: A case report

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Introduction: Haemolytic disease of the fetus and newborn (HDFN), is a condition in which transplacental passage of maternal antibodies results in immune haemolysis of fetal and neonatal red blood cells. Severe HDFN can cause stillbirth or hydrops fetalis. The spectrum of the disease has changed over the last few decades. Administration of Rh immunoglobulin to RhD negative women during pregnancy and after birth of RhD positive infants has reduced the incidence of RhD haemolytic disease due to maternal isoimmunisation. *Case report:* We report a very rare case of 38 years old female (O RhD negative) who had intrauterine death (IUD) at 27 weeks of gestation due to severe HDFN. She had 2 children and history of 5 consecutive 1st trimester miscarriage. The current IUD occurred due to anti-D alloantibody in the maternal serum at titre of 1:4096 as a result of RhD isoimmunisation. The anti-D alloantibody was developed due to failure of administration of Rh immunoglobulin as a consequence of wrong ABO and Rh blood grouping (O RhD positive) during her first pregnancy at Health Clinic. *Conclusion:* We highlight the importance of performing antenatal ABO and Rh grouping using gold standard method and screening of the irregular antibody especially for pregnant women with rare blood group. This could assist in diagnosing and successfully treating RhD negative women during pregnancy with routine antenatal Rh immunoglobulin prophylaxis. It is very crucial to decrease the occurrence of readily reduced incidence of maternal isoimmunisation and preventable perinatal morbidity and mortality.