

The 15th Annual Scientific Meeting of the College of Pathologists, Academy of Medicine Malaysia was held at Pullman Putrajaya Lakeside Hotel, Putrajaya, Malaysia on 3-5 June 2016. Abstracts of scientific presentations are as follow:

K PRATHAP MEMORIAL LECTURE

Lipid Problems in Children

Dr John Coakley

It has been well established that atherosclerosis begins in childhood. In the Bogalusa heart study, by the age of 15 years, 50% of young people had coronary fatty streaks, and by age 20, 33% had coronary atheroma. Therefore, prevention of atherosclerosis in the paediatric age group is of paramount importance.

To understand lipid problems in children more clearly, one needs an understanding of lipid and lipoprotein metabolism. The exogenous pathway, involving lipid ingestion and chylomicron formation, will be described, as will the endogenous pathway which starts with the synthesis of very low density lipoprotein (VLDL) in the liver. Recently, the important role of the peptide PCSK9 in metabolism of low density lipoprotein cholesterol (LDLC) has been elucidated. This has led to exciting new developments in the treatment of hypercholesterolaemia.

Primary hyperlipidaemia in childhood can involve increases in both total cholesterol and/or triglycerides. One of the most important conditions to recognise is familial hypercholesterolaemia (FH) which can affect one in 500 of the population. This condition is often not recognised, leading to preventable early deaths. When an index case of FH is recognised, “cascade” screening of first and second degree relatives can lead to detection of new cases and institution of life saving treatment. Hyperlipidaemia, secondary to other diseases, also occurs in paediatrics, so investigation for causative disorders, such as hypothyroidism, is important in the assessment of the hyperlipidaemic child.

Integrated guidelines for cardiovascular health and risk reduction in children and adolescents, endorsed by the American Academy of Pediatrics, have been published. In addition to treatment of hyperlipidaemia, other important factors in risk reduction include diet, exercise, tobacco exposure, blood pressure and obesity. The American guidelines recommend screening of all children between the ages of 9 and 11 years for hypercholesterolaemia. An Australian model of care for management of paediatric FH was published in 2013. An important part of management includes the early introduction of statin treatment, as this has been shown to prevent early cardiovascular events and premature death.

ROYAL COLLEGE OF PATHOLOGISTS UK: BHAGWAN SINGH FELLOW PLENARY

Molecular Pathology and Immunohistochemistry in Diagnosis of Soft Tissue Tumors

Prof Dr Cyril Fisher

Soft tissue tumors are a heterogeneous group of more than two hundred neoplasms, including variant patterns, that can be benign, intermediate or malignant. They are classified according to their line of differentiation, which can be expressed in varying degree. Some tumors show morphological features of differentiation towards a specific mesenchymal tissue, but many appear only as pleomorphic, small round cell, spindle or epithelioid cell tumors and ancillary diagnostic techniques are required to elucidate their nature. These include immunohistochemistry, for which new antibodies continue to be developed, and molecular diagnostic techniques.

Many malignant and benign soft tissue tumors have consistent genetic abnormalities, including translocations (detectable by FISH) resulting in fusion genes (with products detectable by PCR), or mutations, amplifications and deletions of specific genes or chromosomal segments. Knowledge of these is increasingly applied for diagnosis, predicting behavior, and identifying potential therapeutic targets. However, similar genetic changes can be found in remarkably diverse tumor types so that lack of specificity of molecular changes, with promiscuity of translocations and fusions, is a growing phenomenon including among many tumors with EWSR1 gene rearrangement.

More complex and advanced techniques such as gene expression profiling can lead to development of new antibodies and define gene signatures that might prove to be useful in developing a prognostic classification. Next generation sequencing can identify large numbers of molecular events that might be of value for diagnosis and for targeted therapy.

ANATOMICAL PATHOLOGY**4th June 2016 - Symposium 1A (0830 - 1000 hrs)****S1Aa. Challenging Presentations of Squamous Lesions in Cervical Liquid-based Cytology**

Mr Stuart Dobson

Observable differences are noted in the basic cytomorphology seen in the conventional Pap smear and the ThinPrep Pap test and are generally associated with the fluid-collection method and subsequent wet fixation. The conventional Pap smear has thick and thin areas, air-drying artifact, and often there is mechanical distortion of the cellular material. As a result of wet fixation of cells, enhanced cytoplasmic detail results in better ability to determine parentage of cells and stage of maturation. Enhanced nuclear detail provides better visualisation of membrane and chromatin appearances. Caution should be exercised to avoid over-interpretation of well-preserved nuclei. Nuclear hyperchromasia typically associated with squamous lesions on conventional Pap smears may be reduced on ThinPrep Pap Test slides. If hyperchromasia is present it should be considered, but the absence of hyperchromasia should not be used to disregard nuclear abnormalities.

This presentation discusses the cytomorphologic criteria and differential diagnoses of several challenging squamous cell presentations encountered in liquid-based cervical cytology specimens.

Specific morphologic challenges to be discussed include:

- Squamous Metaplasia vs ASC-US vs ASC-H
- Squamous Repair
- Non-keratinizing SCC vs Adenocarcinoma

S1Ab. Challenging Presentations of Glandular Lesions in Cervical Liquid-based Cytology

Mr Stuart Dobson

Although from the lay perspective the principle intent of the Pap test is the detection of precursors of squamous cancer, cytologists are well aware of the challenges posed by glandular cells in the cervical sample. Sensitivity of Pap testing for true glandular neoplasia is less than that for squamous lesions, in part because glandular lesions arise in the endocervical canal where they may be difficult to sample. The specificity of cytologic detection of glandular abnormalities is also problematic, given the high frequency in which cytologic diagnosis of "Atypical Glandular Cells" is subsequently associated with non-glandular histology, such as a squamous lesion or a reactive process on follow-up.

This presentation discusses the cytomorphologic criteria and differential diagnoses of several challenging glandular cell presentations encountered in liquid-based cervical cytology specimens.

Specific morphologic challenges to be discussed include:

- Atypical Endometrial Cells
- Atypical Endocervical Cells (endocervical repair)
- Endocervical Adenocarcinoma in-situ vs Tubal Metaplasia vs Lower Uterine Segment

S1Ac. Pancreatic Cytopathology

Prof Dato' Dr Sharifah Noor Akmal

Mortality from pancreatic carcinoma remains stubbornly high and its survival is amongst the lowest in cancers. Pancreatic ductal adenocarcinomas constitute 85-90% of all pancreatic neoplasms. The five year survival for these common pancreatic cancers is reported to be around 5%. Early diagnosis, when the tumour is limited to the pancreas and thus amenable to surgery, is critical to improve survival.

Recently Endoscopic Ultrasound Guided (EUS) guided needle biopsy has become the method of choice for many pancreatic lesions because it offers some advantages over other techniques. However, EUS fine needle aspiration (FNA) cytology samples from the pancreas are amongst the most challenging to interpret cytologically. While these techniques have significantly improved the ability to obtain diagnostic material they present pathologists with new challenges for accurate interpretation. Differential diagnosis can be complicated by such issues as contaminating cells and mucus from the gastrointestinal tract or by cells obtained inadvertently from adjacent tissues. Well differentiated neoplasms, particularly low grade mucinous lesions of the pancreas, can be very difficult to distinguish from contaminating material from the gastrointestinal tract in these types of samples. Chronic pancreatitis and cystic lesions of the pancreas present additional challenges in cytology diagnosis.

Although pancreatic cytopathology is fraught with diagnostic pitfalls, an integrated approach to establishing a diagnosis, incorporating an understanding of cytopathology, surgical pathology, and radiology, paves the road to the correct diagnosis.

4th June 2016 - Symposium 3A (1400 - 1530 hrs)

S3Aa. Gastric Cancer and Its Pre-cancerous Lesions

Prof Dr Teh Ming

The stepwise progression to malignant transformation in the stomach is well known. Over the last five years, as part of the Gastric Cancer Epidemiology Program, we have screened a high risk cohort of Singapore patients for gastric cancer and in the process, we have encountered a wide variety of gastric pathology. Some of these entities are likely to be under recognized and under diagnosed and will be discussed systematically using a simple “slide seminar” format.

S3Ab. The Treatment of NETs: How to find Clinicopathological Correlations for Improved Outcome?

Dr David Tai Wai Meng

Neuroendocrine tumors are a group of biologically and clinically heterogeneous neoplasms arising frequently in the lung and GI tract with increasing incidence globally. The understanding of NET continues to evolve as we have more tools for diagnosis and treatment for each patient. Integral to this is an anatomic description of primary tumor and tumor differentiation/grading in personalizing treatment. Spatial and geographical tumor heterogeneity is increasingly described and may pose a challenge in treatment. Molecular profiling is still at an incipient stage but could potentially have prognostic and predictive value. Integrative omics of tumor specimens could be informative in drug development.

4th June 2016 - Symposium 4A (1600 - 1730 hrs)

S4A. An Approach to Soft Tissue Tumour Diagnosis

Prof Dr Cyril Fisher

The principal problems in diagnostic surgical pathology of soft tissue tumors are determining the lineage and subtype of the lesion, and assessing its malignant potential. This is increasingly demanding as the amount of tissue provided is often very small. Core biopsies should be embedded as one core per cassette to optimise use of scarce material. It is then necessary to have a systematic approach. This initially requires awareness of clinical data including age, gender, location and duration of the lesion and any antecedent or associated conditions or therapeutic interventions. Morphology is assessed principally at low magnification noting the cellularity, morphologic and vascular pattern(s), the nuclear shape, the mitotic index, stromal features, and presence of necrosis. An appropriate immunohistochemistry panel can then be selected including specific additional antibodies as indicated by the provisional differential diagnosis. Awareness of the specificity and sensitivity of each antibody is necessary. Molecular investigation (FISH or PCR) is requested to make or confirm a specific diagnosis, to assess prognostic factors, or for planning targeted therapy. The pathologist needs to integrate molecular findings into the overall features of the case, and to be aware of the limitations of these findings. National or international guidelines for reporting should be followed, including grading and assessment of margins

5th June 2016 - Symposium 5A (0830 - 1000 hrs)

S5A. Recent Developments in Surgical Pathology of Soft Tissue Tumors

Prof Dr Cyril Fisher

New soft tissue tumors continue to be described and applications of newer investigative techniques lead to revision of our concepts of established entities. This presentation will focus on newly emerging entities among Ewing-like small round cell sarcomas, that are defined by gene fusions; advances in myoepithelial tumors of soft tissue and bone including recent genetic discoveries; primary pulmonary myxoid sarcoma, clear cell sarcoma-like tumor of GI tract and other tumors with EWSR1-CREB1/ATF1 fusions; and recent developments in immunohistochemistry and molecular genetics of the spectrum of epithelioid endothelial neoplasms – epithelioid angiosarcoma, epithelioid hemangioendothelioma, epithelioid sarcoma-like (pseudomyogenic) hemangio-endothelioma, and epithelioid hemangioma.

MEDICAL MICROBIOLOGY**4th June 2016 - Symposium 1B (0830 - 1000 hrs)****S1Ba. The Challenge of the Discreet Malaria Parasites**

Prof Dr Georges Snounou

The study of malaria became a true scientific endeavour only when the nature of the pathogen that causes the condition was identified in 1880. It soon became apparent that the different similar protozoan parasites could cause malaria in humans, and over the next 100 years observations in the human and insect hosts were based on microscopic examination. The limitations of microscopy were brought into sharp focus with the advent of molecular methods that allowed detecting and identifying the parasite with unprecedented sensitivity and specificity. In this talk, I will review the knowledge that has been gained from the myriad of molecular analyses that have been conducted worldwide on malaria parasites and discuss the implication of the new findings on the current global efforts to control and eliminate this age-old scourge of humanity.

S1Bb. Dilemmas in Mycopathology

Assoc Prof Dr Tzar Mohd Nizam Khaithir

According to the European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group and the National Institute of Allergy and Infectious Diseases Mycoses Study Group (EORTC/MSG) Consensus Group definitions, the diagnosis of invasive fungal disease (IFD) can be classified as proven, probable or possible, depending on how many criteria are fulfilled. One of the criteria for proven IFD is histopathologic, cytopathologic or direct microscopic examination of a specimen obtained by needle aspiration or biopsy, in which hyphae or yeasts are seen accompanied by evidence of associated tissue damage. The criterion seems straightforward enough but in reality, this is hardly the case.

First, there is difficulty in obtaining a clinical specimen. Most patients with a systemic fungal infection are generally immunocompromised and ill. They may not be fit enough to undergo such invasive procedures as obtaining tissue biopsy or may be at risk of bleeding during or after the biopsy. Second, there are difficulties faced by the personnel in the pathology or mycology laboratories such as inadequate tissue sample, poor staining techniques leading to poor staining results and difficult-to-read slides, and difficult interpretation. More often than not, the tissue is not sent for culture, hence making it more difficult to relate it to the histopathological findings. Third, there are issues in reporting the results. What do we report? How much should we report? How can we make our report as useful as possible for our customers, i.e. the clinicians? These issues or dilemmas will be discussed.

S1Bc. Evolution of Clinical Microbiology Laboratory Through Automation and Benefits in Patient Management

Dr Satheesh Thangaraj

Over the last decades, the paradigm of managing infectious diseases has changed significantly. Evolution of challenges such as increasing incidences, emerging new infectious diseases, antimicrobial resistance, occurrence of health care associated infections, etc have made managing infectious diseases as one of the complex process. However, the advancement in technology is made possible for us meet these challenges and manages patients effectively. The proposed talk will summarize the advancements happening in clinical microbiology lab and their important beneficial role in certain key clinical situations such as sepsis, patients with MDR bacterial infections, Tuberculosis etc.

4th June 2016 - Symposium 2B (1200 - 1300 hrs)**S2B. Epidemiology and Laboratory Diagnosis of *Clostridium difficile* Infection: Differences and Rationale Behind the UK and US Guidelines**

Prof Dr Thomas Riley

Clostridium difficile, a Gram positive, spore-forming, anaerobe, is the primary aetiological agent of pseudomembranous colitis and a leading cause of antibiotic-associated diarrhoea. *C. difficile* virulence is classically attributed to two large glucosylating toxins: toxin A and toxin B. With an estimated 500,000 cases annually in the USA and medical costs totalling up to \$3 billion USD, *C. difficile* infection (CDI) is a significant economic and medical burden across the globe, however, awareness and surveillance of CDI in Asia is poor. Limited studies suggest CDI may be a significant problem in this region, but the true prevalence remains unknown particularly in S-E Asia. Poorly regulated antibiotic use in Asian countries could lead to high rates of CDI.

Diagnosis and surveillance of CDI rely on having available a sufficiently sensitive and specific laboratory test suitable for both purposes. Currently such a test does not exist, leading to much confusion about what to do. In the UK, the English Department of Health has mandated that a test to detect free toxin in faeces should be used for the laboratory diagnosis of disease. In the USA, molecular tests to detect toxin genes have been implemented widely leading to suggestions of over-reporting of CDI cases.

4th June 2016 - Symposium 4B (1600 - 1730 hrs)**S4Ba. Laboratory Preparation for Diagnosing Emerging Infectious Diseases**

Dr Mohd Apandi Yusof

Emerging infectious disease is a disease that has newly appeared in a population or is rapidly increasing in incidence or geographic range. Surveyed by WHO revealed that on average, one newly identified infectious disease every year for each of the last 30 years. As emerging infectious diseases that happen in one country can rapidly spread to another, it is imperative that we find out as much as we can about the disease in the shortest time possible. Thus, laboratories must be strengthened so that they can quickly detect emerging diseases caused by known pathogens and possess the capability to identify unknown or novel pathogens. Here we describe the capability of a reference laboratory in the Ministry of Health to provide diagnostic services and share our experiences in dealing with emerging and re-emerging such as Nipah, SARS, Pandemic H1N1, MERS-CoV, H7N9, Ebola dan currently Zika virus.

S4Bb. Updates on Diagnosis and Epidemiology of Leptospirosis in Malaysia

Dr Fairuz Amran

Leptospirosis is an important zoonotic disease caused by the pathogenic spirochete from the genus *Leptospira*. It is the most widespread zoonoses mainly because of the ability for the bacteria to survive in renal tubules of diverse animal reservoirs and in the environment. Data from a systematic review conducted by the "Leptospirosis Epidemiology Reference Group (LERG)" and the "Global Leptospirosis Environmental Action Network" (GLEAN) has estimated 873,000 annual cases globally, and 48,600 annual deaths due to leptospirosis. In Malaysia, the annual incidence has increased gradually over the past decade from 1.45 per 100,000 in 2005 to 30.2 per 100,000 in 2015. The mortality rates range from 0.01 to 0.31 per 100,000.

The greatest challenge in the management of leptospirosis is making the correct diagnosis in a timely manner. The clinical spectrum of the disease is rather broad and often nonspecific leading to significant misdiagnoses. Laboratory confirmation are technically demanding, usually require paired samples, and may be inaccessible in resource-poor settings. Numerous tests have been developed to address this issue. Direct observation is unreliable and not recommended. Isolation of the leptospire is very difficult due to the fastidiousness of this organism and can take up to months to be positive and therefore not useful for early diagnosis. Most laboratories around the world are still depending on various diagnostic techniques that detect antibody in patients' sera. Some examples include the enzyme-linked immunosorbent assays and latex agglutination tests kits to detect IgM. However, the micro agglutination test is still the serological "gold standard test to confirm the leptospirosis diagnosis till now. The greatest limitation of these antibody detection test is the delayed seroconversion and thus may not be detected during the acute phase. Several polymerase chain reaction assays (conventional and real time) have been described. However, due to the variability of gene sequences amongst the numerous species and serotypes, multiplex PCR may need to be performed for it to be reliable. Therefore, despite the availability of all these methods, newer techniques especially to detect leptospira antigen and DNA need to be developed for rapid accurate diagnosis of this potentially debilitating and fatal disease.

S4Bc. Diagnostic Tools for Infectious Diseases in Pathology Practice and Research

Prof Dr Wong Kum Thong

Traditional techniques such as light microscopy, and to a lesser extent electron microscopy, are still relevant for the pathological diagnosis of many infectious diseases. However there have been recent advances and improvements in immunohistochemistry and other molecular techniques such as in situ hybridisation and the polymerase chain reaction to detect pathogens in diseased tissues. By applying these newer methods on infected tissues, many viruses, bacteria, protozoa and fungus can be positively identified within the context of observed inflammatory lesions. In our laboratory several of these novel techniques have been developed mainly for research purposes to study the spread of infection, tissue tropism, etc, and, perhaps in more limited way, for diagnostic purposes as well. Development of in-situ hybridisation for detection of RNA viruses, *Bukholderia pseudomallei* and *Plasmodium* will be discussed and highlighted.

5th June 2016 - Symposium 5B (0830 - 1000 hrs)**S5Ba. Reliability of Automated Biochemical Identification of Bacteria - UMMC Case Presentation**

Dr Maria Kahar Bador, Dr Rukumani Devi Velayuthan

There is an increasing move towards using automated identification biochemical systems for routine bacteriological identification both in Malaysian private diagnostic laboratories and government hospitals using various systems. Automated systems have an advantage of being less labour intensive and faster turn-around time for identification. In this presentation we discuss two cases where a particular system was used. The first case involved a gram-negative, curved bacilli isolated from a stool specimen of a gastroenteritis patient where the automated system was found useful in obtaining an accurate identification

of the bacteria which is otherwise not easily diagnosed routinely. The other case is an aerobic, gram-negative bacteria which causes an important local disease and was isolated from a respiratory specimen but was unfortunately misidentified in the same automated system. Both cases are discussed with emphasis on the lessons learnt.

S5Bb. Update in Infection Control: Hospital Sungai Buloh Experience

Dr Tuan Suhaila Tuan Soh

Hospital Sungai Buloh is one of the hospitals in the state of Selangor. It is a 630-bedded tertiary hospital which has been identified as centre of excellence for the following disciplines: infectious diseases, emergency and trauma, neurosurgery, maxillofacial surgery, burn and reconstructive plastic surgery, and orthopaedics and traumatology. There are 5 infection control nurses (ICN) in the hospital giving the ratio of ICN:bed as 1:126. In addition to these 5 ICN, each ward has at least 1 infection control link nurse (ICLN). Infection control activities in Hospital Sungai Buloh include surveillance (multiresistant organisms, surgical site infections); hand hygiene (compliance audit, World Hand Hygiene Day); antimicrobial stewardship program in collaboration with pharmacy, infectious diseases and microbiology teams; education/training (for healthcare workers and other support staff); and preparedness for emerging diseases (e.g. H1N1, MERS-CoV, Ebola).

S5Bc. The Use of Next Generation Sequencing for Identification and Characterization of Microbes

Dr Toh Wen Hong

Next generation sequencing is increasingly used in public health. Current paradigm of use of NGS in microbiology is that it is most beneficial for epidemiological studies but minimal benefits for identification and detection. However there are exceptions to this model. The talk will be focused on discussing those exceptions and highlighting the strengths of NGS in microbial characterization for drug susceptibility testing and outbreak prevention.

CHEMICAL PATHOLOGY

4th June 2016 - Symposium 1C (0830 - 1000hrs)

S1Ca. Paediatric Thyroid Disease

Dr John Coakley

Disorders of the thyroid gland are one of the more common problems seen in paediatrics and both hypo- and hyperthyroidism may occur. In this presentation, I shall first cover the physiology and control of thyroid hormone production, and then go through the causes of abnormal free thyroxine (fT4) and thyroid stimulating hormone (TSH) results. Abnormal thyroid function tests (TFTs) may be factitious due to the presence of heterophile antibodies or other interfering substances, while there are certain drugs which can interfere with TFTs.

Worldwide, the most important cause of hypothyroidism is iodine deficiency. The early detection of hypothyroidism has been revolutionised by the introduction of newborn screening which has been present in Australia since 1977. In the older child, autoimmune disorders of both hypo- and hyperthyroidism occur quite commonly, while the incidence of thyroid cancer seems to be increasing. Cases to illustrate some more unusual presentations of thyroid disease in childhood will be presented at the end of this talk.

S1Cb. Congenital Hypothyroidism Screening: Malaysia's Experience and Challenges

Dr Adlin Zafrulan Zakaria

Congenital hypothyroidism (CH) is a treatable deficiency of the thyroid hormone that causes severe mental retardation and growth deficiency if it is not detected and treated early. This is why screening is very important because with early detection and treatment, infants usually develop normally without mental handicaps. Newborn screening efforts in Malaysia began in 1991 when national meeting of government pediatricians commissioned a report on a national screening program for CH. An effective screening strategy is to not only choosing a method that is effective in terms of early recall and treatment with low false positive and no false negative rates, but also one that can be included into already existing established screening programmes of each country. As with other screening programmes, CH screening has its own challenges that can arise from the screening approach, the test performed and the cut off values, as well as to recall babies with abnormal initial result.

4th June 2016 - Symposium 2C (1200 - 1300 hrs)

S2Ca. Challenges in Delivering Biochemical Genetic Testing in Acute and Emergency Cases

Dr Julaina Abdul Jalil

Inborn errors of metabolism (IEM) are caused by absence or abnormality of an enzyme or its cofactor, leading to either accumulation or deficiency of a specific metabolite. IEM that can present with acute, life-threatening illness are particularly maple syrup urine disease, organic acidurias, urea cycle disorders, and fatty acid oxidation disorders. Neurotransmitter defects and related disorders might present with severe metabolic encephalopathy. Delay in diagnosis may result in acute metabolic decompensation, progressive neurologic injury, or death. The laboratory faces challenges starting from sample collection, sample analysis until reports are produced. These challenges may differ for different type of acute IEM. We adhere to strict laboratory standards in order to deliver the results in a precise and timely manner to the clients. Compliance to the standards are crucial as optimal outcome for children with IEM depends upon prompt recognition of the signs and symptoms of metabolic disease, evaluation, and referral to a centre familiar with the evaluation and management of these disorders.

S2Cb. Increasing Importance of Specimen Integrity for Effective Quality Improvement in Laboratory Medicine

Dr Anita Singh

Quality and accountability are the focus of current concern in diagnostic laboratories. Lab work flow process as we all understand is divided into three phases – pre-analytical, analytical and post-analytical. The pre-analytical phase comprises all of the processes occurring before the specimen is processed in the analyzer.

Studies have indicated that nearly 68% of all errors in laboratory testing are associated with the pre-analytical phase. In current times when 70- 85% of patients clinical decisions are based on information derived from laboratory test results. Mounting evidence indicates that reliability cannot be achieved in a clinical laboratory through the mere promotion of accuracy in the analytical phase of the testing process. For tests to be accurate we need quality specimen ie. a specimen which accurately reflects the in vivo situation of the patient at the time of collection .

The major pre-analytical errors associated with phlebotomy include hemolysis, improper clotting, transcriptional errors, insufficient volume to perform test, in adequate patient preparation, incorrect specimen collection time, overfilling/ under filling of specimen collection vials, contamination etc.

Transportation and processing also effects the specimen quality in reference to the transportation time, temperature and humidity, centrifugation, storage, exposure to light etc.

Good practices and compliance with the new strategies for error prevention can lead to a substantial reduction in pre-analytical errors. These practices include:

- Increased error detection, reporting and tracking
- Process and risk analysis
- Process redesign
- Enhanced healthcare professional training
- Improved communication among healthcare professionals

4th June 2016 - Symposium 3C (1400 - 1530 hrs)

S3Ca. Investigation of Jaundice

Dr John Coakley

Before describing the investigation of jaundice in the newborn, I shall discuss the various aspects of liver function tests, and how they can be used to differentiate hepatocellular disease from biliary obstruction. The metabolism of bilirubin will be covered in detail, as this is important to understand the aetiology of jaundice. Unconjugated hyperbilirubinaemia is very common in newborns, and its causes are numerous. Proper investigation, in particular looking for evidence of haemolysis, will usually give rise to a diagnosis. Management may consist of phototherapy or rarely exchange transfusion. Prolonged conjugated hyperbilirubinaemia is less common, and again has numerous causes. Detailed early investigation of this problem is necessary, as some treatments need to be instituted as early as possible, e.g. the Kasai operation for biliary atresia. There are other particular disorders which cause liver disease outside the newborn period. Again, investigations must be done as soon as possible to elucidate the cause. Wilson's disease is a particular example, where early investigation and treatment can improve the prognosis. At the end of my talk, I shall present some cases of interest to illustrate the various aspects of paediatric liver disease.

S3Cb. Challenges of Using HbA1c for Diagnosis of Diabetes Mellitus

Assoc Prof Dr Pavai Sthaneswar

In 2011, the WHO recommended the use of HbA1c as a test to diagnose diabetes, using a threshold of 6.5% (48 mmol/mol). Based on the Metabolic Syndrome Study of Malaysia (MSSM), slightly lower level of HbA1c (6.3%) has been recommended for the diagnosis in the recent Malaysian Clinical Practise guidelines on management of type 2 diabetes. HbA1c test has several advantages to the fasting blood glucose and oral glucose tolerance test. It avoids the need for the person to fast and to have preceding dietary preparations. Compared to plasma glucose, HbA1c has a better pre-analytical stability, lack of diurnal variation and low biological variation. Due to these advantages, A1c can be used as a primary diagnostic test for diabetes and this may lead to early diagnosis of the disease and hence improved outcomes.

However, HbA1c measurement may be affected by medical conditions affecting the test accuracy (via either alteration in red cell lifespan or glycation) or by analytical interference. The clinical sensitivity of A1c is low, hence using HbA1c alone will not identify a substantial proportion of individuals who could be considered as having diabetes using a glucose-based test. It is imperative that the patient is not labelled incorrectly as diabetic or equally that their diagnosis is not missed. The requesting clinicians should be aware of the limitations of the assay. The laboratory personnel should be familiar with the interferences of the method used in the laboratory. If there is any discrepancy in the results, a good communication between the clinician and the laboratory, would help in the better management of the patient.

4th June 2016 - Symposium 4C (1600 - 1730 hrs)**S4C. Challenges in Providing Emergency Toxicology in Malaysia**

Dr Nor'ashikin Othman

Acute poisoning is a significant health problem all over the world. Most patients with poisoning or drug overdose can be treated successfully with routine clinical biochemistry. Clinical history, signs and symptoms at presentation may provide essential clues that indicate the nature of poisoning. However, the toxicological analysis can play a role in situation where the diagnosis is in doubt, patient may presented with mixed toxidrome due to polypharmacy or the quantitation of the toxin in blood may affect the approach to therapy. Therefore, the goal of emergency toxicology service is to provide clinically useful toxicology test results with an acceptable laboratory turnaround time (LTAT) to support the needs of poisoned patient. The challenge for the laboratory is to decide how much toxicology testing is appropriate for patient care, what technological capabilities are required and what testing can be financially justified. The selection of drugs for screening should be based on the prevalence of the drug and toxins in the population. However, in Malaysia, the nationwide data on poisoning pattern is scarce and incomplete and the decision on availability of drug assay might be inaccurate. Communication with the clinician on the limitation of toxicology analysis and how the results should be interpreted is important for better patient care.

5th June 2016 - Symposium 5C (0830 - 1000 hrs)**S5Ca. Standardization of Reporting Chemical Pathology Test Results**

Dr Adlin Zafrulan Zakaria

Standardization or harmonization of laboratory results means that the results are comparable (within clinically acceptable limits) irrespective of the measurement procedures used, the unit or reference interval applied, and when and/or where the measurement is made. Harmonization of test results includes consideration of pre-analytical, analytical and post-analytical aspects. The harmonization is very crucial in order to prevent for misinterpretation of results, wrong treatments and adverse patient outcomes. As laboratory clients, they expect to receive not only the right result on the right patient at the right time in the right form, but also the right test choice with the right interpretation with the right advice as what to do next with the result. It is obvious that harmonization does not happen overnight but is a long term consensus process that ideally is based on hard evidence that has been systematically compiled and has involved close interaction between the laboratory and the clinicians to ensure successful implementation.

S5Cb. Standardisation of Malaysian Population Reference Values

Dr Hanisah Abdul Hamid

Reliable and accurate reference intervals (RIs) for test results are important in making correct decision for management of patients. It should be able to differentiate healthy from disease state. ISO 151895 requirement also states (biological) reference intervals shall be reviewed periodically, and whenever a particular interval is thought to be no longer appropriate, or where a pre-examination or examination (analytical) procedure is changed.

In a country with diversified population, it is especially important to harmonise the RIs. Reference intervals are subject differences in the reference population due to racial or environmental factors, age, sex and race. The methodologies of analyse measurements, units and sample types, must be taken into consideration.

Beyond analytical quality, it is also important to ensure Post-analytical quality assurances in the clinical results for decision making. The IFCC, Committee on Reference Intervals and Decision Limits (C-RIDL), published details of multicentre studies on RIs in the C28-A3 guideline, published in 2008 by CLSI and IFCC. Malaysia is establishing its own standard reference values for its population.

S5Cc. Integrating phi into Prostate Cancer Detection

Dr Katherine Qian

Prostate cancer (PCa) is the most prevalent malignant tumor and the second leading cause of cancer death in men in western countries. Since 1990's, prostate-specific antigen (PSA) screening has led to 45% decrease of prostate cancer mortality in US. However, low specificity of PSA resulted in over-diagnosis and over-treatment. New biomarker is urgently needed, especially for the men with PSA level in the "grey zone" of 2-10ng/ml. [-2]proPSA, also known as p2PSA, is a truncated form of PSA precursor.

[-2]proPSA has been shown to have the best stability and PCa specificity in all the forms of PSA molecule. Prostate health index (phi) is a derived index composed of [-2]proPSA, total PSA (tPSA) and free PSA (fPSA): $\text{phi} = \frac{[-2]\text{proPSA}}{t\text{PSA}}$. The indication for phi use is: 1) men >50 years of age; 2) negative DRE; 3) PSA level in "grey zone" (4-10 ng/mL in US and 2-10ng/ml in out-of-the States areas).

It was shown that Phi has the best accuracy in differentiating PCa from benign prostate disease (AUC: phi-0.77, tPSA-0.5, %fPSA-0.68). The specificity of phi in detecting prostate cancer is nearly 3 times higher than PSA. Unnecessary biopsies can be reduced by 21% when phi is used at 90% sensitivity (study in China).

In addition, increasing phi values were associated with increased biopsy Gleason score, suggesting a discrimination of indolent vs. aggressive cancers. [-2]proPSA and its derivatives are also predictors of PCa characteristics at final pathology after radical prostatectomy. Interestingly, [-2]proPSA already differed significantly between PCa and benign prostate 4 years before diagnosis. It is also associated with biopsy reclassification during active surveillance for PCa.

Head-to-head comparison of phi and urinary PCA3 for predicting cancer showed that phi has better AUC in both initial and repeated biopsy settings (initial: 0.69 vs 0.57, repeated: 0.72 vs 0.63)

Overall, phi is a more specific PCa biomarker than PSA, which improves the probability of finding aggressive PCa on biopsy and reduces the number of negative biopsies. Use of phi can reduce unnecessary costs and improve patient management decisions. It is also recommended in the NCCN guideline of Prostate Cancer.

HEMATOLOGY

4th June 2016 - Symposium 1D (0830 - 1000 hrs)

S1Da. Blood Transfusion: Less is More

Prof Dr Nicholas Jackson

Transfusion of red cells can be life-saving and also enable some types of surgery to be performed which would otherwise be impossible. However, transfusions can also be harmful, and thus as far as possible they should be given only when there is evidence that the likely benefits outweigh the potential risks. Transfusion-transmitted infections are a long-recognised risk, and it is not possible completely to eliminate hazards such as TRALI, DHTR, TACO, or even incompatible blood transfusions due to identification errors. Very large and detailed analyses of (mainly surgical) patient databases have shown evidence of increased morbidity (infections, organ failure, duration on ventilators, length of hospital stay, cancer recurrence) and mortality in patients receiving allogeneic red cell transfusions in the peri-operative period.

It is encouraging that clinicians and transfusionists have started conducting large, well-designed prospective clinical trials which increasingly provide evidence to guide blood transfusion protocols. Some of these studies will be reviewed, and in most cases they show that a 'restrictive' transfusion policy (say, using a trigger of an Hb of 70 or 80g/L) is not inferior in terms of morbidity and mortality to a 'liberal' policy (say, using a trigger of 100g/L). This applies to patients on ITU, those having cardiac surgery, and even to elderly patients at risk of cardiac disease having non-cardiac surgery. Amongst medical patients, there is evidence that a restrictive policy is better for those with GI haemorrhage; and a higher Hb threshold for transfusion (as part of early goal-directed therapy) does not benefit patients with sepsis.

However, a recent meta-analysis has concluded that it is not safe to use a trigger lower than 80g/L in patients with acute coronary ischaemia or even chronic cardiovascular disease. A recent Danish study of very frail elderly patients post hip fracture surgery also found a liberal strategy (Hb trigger 113g/L) resulted in lower mortality than a restrictive threshold (97g/L). Thus applying the results of these trials requires one to look carefully at inclusion/exclusion criteria and precise Hb thresholds.

Alongside a whole system approach to optimising outcomes of patients who might need transfusion, known as 'Patient Blood Management' (see tomorrow's lecture), policies with restrictive transfusion thresholds, in evidence-based populations, should be the norm in all our hospital units. In non-bleeding patients, red cell transfusions should normally be given one unit at a time until the relevant Hb threshold is reached. As the gatekeepers to the blood supply (i.e. as hospital haematologists/transfusionists) we should ensure that this is the case, and encourage regular audits of the indications for blood transfusions. Old habits die hard, so we'll need to work hard on the habits of our older colleagues, and teach the trainees the new ways.

S1Db. Necrotising Enterocolitis - Washed Red Cells

Prof Dr Cheah Fook Choe

Necrotising enterocolitis (NEC) is a gastrointestinal disease affecting primarily preterm infants of lower gestational ages with a high mortality rate (20-40%). The underlying cause is multifactorial but gut immaturity, bacterial translocation and hypoxia-ischaemia are considered as major contributors. Critically ill preterm infants often require multiple blood transfusions because of anaemia from iatrogenic blood loss during the acute period of neonatal intensive care. Haemolysis secondary to T-cryptantigen activation (TCA) has been reported in infants with NEC after transfusion of blood containing anti-T antibodies. This likelihood increases and is associated with a greater severity of NEC. While the high mortality in such cases is probably attributed to the underlying severe NEC complicated by haemolysis, it is plausible that blood transfusion may aggravate NEC with TCA of exposed sialic acid antigen of AB blood group epitopes expressed in neonatal enterocytes. Similarly, this mechanism may be connected with another entity, transfusion-associated NEC (TANEC), reportedly triggered by neuraminidase-producing gut organisms, that expose the antigens for activation. The use of washed red blood cells (wRBC) to mitigate TCA has been proposed to reduce the risk and aggravating NEC but hesitancy prevails because of the current low level of evidence. Nevertheless, blood banking and neonatal specialists need to work together to formulate pragmatic wRBC protocols as available options in the care of preterm infants with NEC faced with exaggerated risks of these complications and mortality.

S1Dc. Massive Blood Transfusion in Emergency Medicine / Utility of a Point of Care ABO / Rh Typing Test

Asst Prof Dr Chien-Chang Lee

Massive transfusion is historically defined as the replacement by transfusion of 10 units of red cells within 24 hours or five units over three hours in response to massive and uncontrolled hemorrhage. The most common situation leading to massive transfusion is trauma. Other less frequent situations such as ruptured abdominal aortic aneurism, liver transplant, and obstetric catastrophes may also lead to massive transfusion. Recent studies showed blinded massive transfusion is associated with a number of hemostatic and metabolic complications. In this talk, we will review the updated evidence on the goal of massive transfusion and the selection of the appropriate amounts and types of blood components to be administered, and requires consideration of a number of issues including volume status, tissue oxygenation, management of bleeding and coagulation abnormalities, as well as changes in ionized calcium, potassium, and acid-base balance. In addition, we will discuss the utility of a point-of-care ABO/RH typing test.

4th June 2016 - Symposium 2D (1200 - 1300 hrs)**S2D. Point of Care in Hemostasis – INR**

Prof Dr Wan Zaidah Abdullah

The main advantage of point of care testing (POCT) is the rapid and effective analytic results with a decreased turnaround time. Several types of devices are available for International Normalised Ratio- POCT (INR-POCT) by healthcare professionals using capillary whole blood specimen. Patient self- testing and self-management have been introduced to monitor warfarin treatment in the community although some practical limitations are expected. There are concerns regarding the use of unregulated INR-POCT practices. The quality assurance is an important part of the analytical process to ensure accuracy and reliability of a test. However in the POCT setting, this aspect may be neglected despite of recommendations in both national and international guidelines. It is important to focus on the best practice and quality aspects of INR-POCT monitors. As with other quantitative tests, the pre-analytical issues and limitations of the POCT should be known by the health care providers. The role of the coagulation laboratory as a partnership in INR-POCT monitoring should be emphasized and practiced in the institutions conducting INR-POCT.

4th June 2016 - Symposium 3D (1400 - 1530 hrs)**S3D. Overview of Thrombophilia and Laboratory Diagnosis**

Prof Dr Wan Zaidah Abdullah

Patients with acquired or hereditary thrombophilia are more likely to develop venous thrombosis or arterial thrombosis or both than healthy individuals. Deep vein thrombosis (DVT) and pulmonary embolism are associated with significant morbidity and mortality. There is a rising trend in the incidence of venous thromboembolism in Asia and similar trend is reported in our country. Idiopathic (unprovoked) venous thrombosis is associated with recurrence of thrombosis in the absence of any of the risk factors such as significant immobility, pregnancy, taking hormonal therapy and certain drugs. Cancer and antiphospholipid syndrome are among the acquired thrombophilias commonly encountered in clinical practice. Hereditary causes are: Protein C, Protein S and Antithrombin deficiencies. Factor V Leiden and Prothrombin 20210A mutations are rare among the Malaysians.

However, with global international migration and inter-racial marriages, these conditions are expected more frequently now than before.

Thrombophilia tests are done for the diagnosis of heritable thrombophilias and antiphospholipid antibodies. However, the indication to do the tests may not be justified in certain situations. Limitations and possible harm to the patients and relatives when testing for thrombophilia markers should be understood by the team members managing these cases. The role of D-dimer test in acute DVT is acceptable only when it is performed using the approved methods and for selected group of patients. Laboratories performing thrombophilia tests should provide the diagnosis and produce a reliable laboratory report taking into account various factors including pre-analytical errors.

4th June 2016 - Symposium 4D (1600 - 1730 hrs)

S4Da. High Resolution Array Comparative Genomic Hybridization (CGH) in Clinical Practice

Dr Zubaidah Zakaria

Array comparative genomic hybridization (aCGH), also called molecular karyotyping, is a technique that was developed for high-resolution, genome-wide screening of segmental genomic copy number variations (CNVs). It allows for comprehensive interrogation of hundreds of discrete genomic loci for DNA copy number gains and losses. Most of the clinically available aCGH platforms are designed to detect aneuploidies, well-characterized microdeletion/microduplication syndromes and subtelomeric or other unbalanced chromosomal rearrangements. It can also uncover numerous CNVs of unclear significance scattered throughout the human genome.

aCGH has revolutionized clinical cytogenetics, as it provides a relatively quick method to scan the genome for gains and losses of chromosomal material. The development and clinical applications of aCGH in the past few years have improved the diagnostic work-up of patients and facilitated enormously the identification of molecular basis of many genetic diseases. It increases the ability to detect segmental genomic CNVs in patients with global developmental delay, mental retardation, autism, multiple congenital anomalies and dysmorphism, and is becoming a powerful tool in disease gene discovery and prenatal diagnostics. aCGH also shows promising results in cancer research as it facilitates the identification of cancer associated genes for better understanding of cancer development and more importantly to provide improved tool for personalised medicine, such as diagnostics, prognostication and therapeutic targets.

S4Db. Molecular Update in Haematological Malignancy

Dr Subramanian Yegappan

Hematological disorders especially neoplasia can be diagnosed only by molecular methods. However these modalities are useful not only for diagnosis but also for monitoring and prognostication. Historically, research techniques were first translated into diagnostic practice in hematological malignancies. This lecture will explore the role and place of these methods in practice today.

5th June 2016 - Symposium 5D (0830 - 1000 hrs)

S5D. Patient Blood Management - Are We Doing Enough?

Prof Dr Nicholas Jackson

PBM as a concept has been around for about 20 years, and is now firmly established as policy in many countries, with increasing support from governments and health financiers. It calls for a re-orientation of Transfusion Medicine away from the plentiful supply of safe products to whoever wants them, to a cooperative venture with blood-using clinicians to ensure that patients who might need blood are managed in an evidence-based manner. PBM has arisen from the recognition that while blood transfusions can be life-saving and surgery-enabling, they can also cause harm, and in general minimizing allogeneic transfusion is a good principle. While predominantly applied to surgical patients, in fact the principles should apply across all specialties. PBM includes:

- (1) Optimizing patients' red cell mass (correcting any treatable anaemia, e.g. before surgery), and their physiological mechanism for coping with anaemia (especially cardiorespiratory fitness).
- (2) Reducing blood losses (e.g. use of certain surgical techniques, stopping anti-platelet drugs before surgery, using antifibrinolytic drugs and cell salvage, reducing unnecessary phlebotomy); and
- (3) Evidence based transfusion triggers (e.g. in many situations, 'restrictive' protocols have been shown to be as beneficial as 'liberal' ones).

PBM has the potential to be a 'Win, Win, Win': Better outcomes for patients, Reduction in costs; and Freeing up the blood supply for patients who really need transfusion. PBM is beginning to happen in Malaysia, with some excellent examples such as pre-operative anaemia management clinics, and use of cell salvage. However, old habits die hard, and too many patients are still 'topped up' the day before surgery, even when tests showed they had a correctable anaemia weeks before. Laboratory haematologists/transfusionists can help, for example by informing clinical colleagues of the advantages of PBM, and by working with them to set up pre-op assessment and anaemia management clinics ('one stop?'). Hospital Blood Banks

should work towards IT systems that allow regular audit of the indications for transfusions by Hb level, specialty/procedure and individual clinician. Government and hospital management should be lobbied to provide funding for transfusion practitioners who can help implement and audit PBM within all major hospitals: they would pay for themselves from the cost savings on blood use.

'Are we doing enough?' We will probably never be able to answer 'Yes' to this question, but we can probably all do more with our clinical colleagues and hospital management to introduce and establish 'Patient Blood Management' within our own hospitals.

FORENSIC PATHOLOGY

4th June 2016 - Symposium 2A (1200 – 1300 hrs)

S2A. Role of Forensic Anthropology in Mass Disasters

Dr Mohamed Azaini Ibrahim

Forensic anthropology is the application of the science of physical anthropology and human biology in solving medico-legal issues. Traditionally, the forensic anthropologist assists law enforcement officers identify missing/dead persons by establishing the biological profile i.e sex, age-at-death, ancestry and living stature. Nowadays, forensic anthropologists are important members in a Disaster Victim Identification (DVI) team, involved in identifying the dead in mass disasters around the world. Among the array of skills and expertise of a forensic anthropologist utilized in mass disasters is the identification of fragmented remains and distinguishing between human and non-human bones. Other members of the team include forensic pathologists, forensic odontologists, radiologists, forensic biologists and specialized police personnel. It is felt however that the forensic anthropologist is underutilized in a mass DVI exercise. Recommendations are being made to expand the role of the forensic anthropologist especially when there is extreme fragmentation of human remains and at the site of incident where they can use their expertise to separate human from non-human bones. They can also be effective at triaging in the mortuary itself, separating bones and determining minimum number of individuals, saving time and other resources. Their anthropology report will also help in the reconciliation phase and enhance the quality control of the entire process.

4th June 2016 - Symposium 3B (1400 - 1530 hrs)

S3Ba. Traumatic Basal Subarachnoid Haemorrhage - Blow to the Back of the Neck

Dr Jessie Hiu

Traumatic basal subarachnoid haemorrhage following assault-related blow to the side of the head and the neck region, particularly at the angle of the jaw and the mastoid region had been extensively reported. The blow is believed to cause a complex movement of rapid hyperextension and rotation resulting in injury to the vertebral artery. The most vulnerable part of the vertebral artery is from the level when the vertebral artery exited the foramen transversarium of the first cervical vertebra and travel in a tortuous course into the cranial cavity. Circumferential stretching of the vertebral artery had been proposed as the mechanism for this injury. It was postulated that the abnormal movement of the head and the neck caused transient occlusion of the vertebral artery and increased in intra-arterial pressure. This sudden increased in pressure exerted force on the lumen resulting in stretching and tearing of the artery from within.

As to date, these Forensic literatures did not address traumatic basal subarachnoid haemorrhage specifically following blow to the back of the neck at the atlanto-occipital region. A case illustration is presented and the possible mechanism for the subarachnoid haemorrhage is proposed.

S3Bb. Pitfalls in Forensic Histopathology Practice

Dr Mohd Suhani Mohd Noor

Forensic histopathology is the application of histopathology to forensic pathology practice. However, by virtue of sharing similar histological techniques and examination, it has often been taken for granted in Malaysia that the only apparent difference between forensic and clinical or surgical histopathology practice is the source of the tissue specimens; the former from the dead and the latter from the living. This misconception is the first of several pitfalls in forensic histopathology practice. In fact forensic histopathology is a specialised field in pathology with its own unique objectives and emphasis that differs from the diagnostic and prognostic objectives of clinical histopathology. The lack of appreciation of histothanatology can mislead a death investigation through unwarranted misinterpretation of histothanatomical artefacts as pathological. Likewise, the histological overinterpretation of agonal artefacts as significant antemortem events can be similarly distracting and misleading. Whilst histological examination is indispensable for the dating of injuries and lesions, a failure to understand the inherent limitations of histological dating in forensic pathology practice can lead to a histological interpretation that is both dogmatic and inflexible. A failure to understand the limitations of forensic histopathology in general can lead to the unjustified reliance on histological examination as the arbiter of the cause of death at the expense of a thorough autopsy, when the cause of death is inordinately

based on equivocal or vague histological findings. As some forensic pathology centers in Malaysia do rely on the anatomical pathologists for the interpretation of their histopathology slides, the aforementioned pitfalls do become a matter of concern with regards to the standard of forensic histopathology practice. It will be stressed that these pitfalls can only be avoided by improving the standard of postgraduate training in forensic histopathology, and by adopting histopathological examination as a routine practice amongst forensic pathologists to improve their familiarity and competency in histopathology.

S3Bc. Challenges in Sudden Paediatric Death Investigation

Dr Khairul Anuar Zainun

Sudden unexpected death in infants and children is a real tragedy. Investigating such deaths can be difficult and poses its own challenges. It requires detailed understanding of death circumstances. Despite clearly spelled out in the laws of the land with regards to the role of investigating officer in sudden death investigation, the approach and subsequent case management can be sometimes clouded by intentions of various interested agencies and inevitably may complicate the investigation process. Autopsy procedures and findings can be different from adults as infants and children are essentially not young adults. Changes in anatomical structures and physiological responses to disease processes need to be properly understood.

This presentation highlights current challenges and dilemmas in investigating sudden unexpected death in infants and children from forensic pathology perspective in Malaysia. Proper logistic, skilled manpower and adequate budget are paramount. Few peculiar but relevant investigative issues can be solved via direct communication and networking of experts from various fields. Most importantly, as the laws of land normally dictates the provision of effective paediatric forensic pathology service, it is essential for health professionals to understand the relevant laws and apply them in practice accordingly.

4th June 2016 - Symposium 4C (1600 - 1730 hrs)

S4C. Application of Mass Spectrometry in Forensic Analysis

Prof Dr Mustafa Ali Mohd

Analysis of chemical constituents in body tissues, body fluids, and any materials in contact or suspected to be used by the body under investigations could be analysed with high accuracy and confirmatory by using mass spectrometric techniques. This technique is not only accurate, but requires extremely small amount of samples for analysis. The quantities that can be measured varies from traces (fathograms) to milligrams and the analysis time is very short. The advancement of technology in mass spectrometry has now enabled analysts to analyse almost any compound ranging from small molecular weights to very large molecular weights and it does not depend on the hydrophobicity or hydrophilicity of the samples anymore. This presentation will discuss the use of this technique including the basic principles involved and the range of possibilities it can offer to the analyst. At the moment, most of the mass spectrometric analysis were available in government laboratories, and are for legal purposes only, but not many hospital or forensic laboratories were equipped with these technologies to guide the forensic pathologists in their routine post mortem and forensic analysis. This may help to reduce the loss of evidence due to sample degradation or narrow scope of analytical capabilities.

POSTER PRESENTATIONS

Poster 1. Evaluation of DNA damage using serum 8-hydroxy-2'-deoxyguanosine (8-OhdG) in young Malaysian triathletes

Gnanou Justin¹, Zainudin Hakimi¹, Johari Hanapi¹, Knight Victor¹, Lumley Steven², Subramaniam Ananthan³, Caszo Brinnell¹

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Introduction: Regular moderate intensity exercise has beneficial health effects, while regular strenuous exercise causes increased production of reactive oxygen (ROS) that may lead to DNA damage. Triathletes experience strenuous muscular activity both during competition and training, being at risk of developing DNA damage. **Objective:** The objective of this study was to estimate DNA damage using 8-hydroxy-2'-deoxyguanosine (8-OhdG) among young triathletes. **Methods:** Eight male and seven female triathletes were recruited for the study. They were on a standardized training regimen and on average competed in at least one endurance event every month for the past 3-4 years. Serum 8-OhdG was measured using enzyme linked immunosorbant assay at the start of the new racing season. **Results:** The male and female triathletes were age matched. The 8-OhdG of both male and female triathletes were 110.5 ± 73.4 pg/ml and 132.6 ± 71.5 pg/ml (normal range <140 pg/ml for both sexes) respectively. There was no significant difference between male and female triathletes. **Conclusion:** The data from our study shows that both male and female triathletes had normal 8-OhdG levels in blood. Though literature shows that DNA damage markers are elevated after a triathlon and endurance training, we find that with sufficient recovery, accumulation of DNA damage can be averted.

Poster 2. Toxoplasma gondii infection among Orang Asli, more than four decades studyAmal Rashad Nimir^{1,2}, Hesham Mahyoub Al-Mekhlafi³, Rohela Mahmud⁴¹Division of Medical Sciences, Faculty of Medicine, Cyberjaya University College of Medical Sciences, Cyberjaya-Malaysia;^{2,3,4}Department of Parasitology, University of Malaya, Kuala Lumpur-Malaysia

Introduction: Toxoplasmosis is still highly prevalent in Southeast Asia countries although risk behaviors to Toxoplasma gondii infection is consistently identified. Aborigines are at higher risk to get this infection due to climatic and cultural influences. **Objectives:** The main objective of this review is to direct the attention of health personnel to a silent, but potentially fatal infection caused by Toxoplasma gondii among the largest Aborigines community in Malaysia. **Materials & Methods:** The authors searched the MEDLINE database via PubMed and identified articles by cross-referencing the terms T. gondii, Aborigines, Orang Asli, epidemiology, risk factors, and seroprevalence of T. gondii. Additionally, we reviewed texts for completeness and to obtain other references of T. gondii among Aborigines in Southeast Asia. **Results:** Data retrieved from studies performed to estimate Toxoplasma infection among Orang Asli shows that there is a steady increase in the seroprevalence throughout the past decades. Although most of the studies did not show any significant differences in the seroprevalence between males and females, yet, almost all results show a strong association between seropositivity and contact with cats. On the other hand, older age groups have higher seropositive rate due to prolonged exposure to the pathogen. **Conclusion:** Being an opportunistic parasite and due to increase trend of immunocompromised patients, action should be taken to control this neglected infection.

Poster 3. Testicular well differentiated neuroendocrine tumour (carcinoid tumour): A case reportNgan Kah Wai, Rosna Yunus¹, Ruwaida A Rahim²¹Department of Pathology, Hospital Serdang, Selangor, Malaysia; ²Department of Pathology, Hospital Kuala Lumpur, Malaysia;²Department of Diagnostic Imaging, Hospital Serdang, Selangor, Malaysia

Introduction: Testicular well differentiated neuroendocrine tumour (carcinoid tumour) is a rare neoplasm and accounts for less than 1% of all testicular tumours. It can be divided into three subgroups: primary pure testicular carcinoid tumours, carcinoid tumours associated with teratoma and carcinoid metastasis to the testis. **Materials & Methods:** A 29-year-old Malay man was presented with painless and slow growing right scrotal swelling for 3 years. Levels of serum Alpha Feto-Protein (AFP) and Beta Human Chorionic Gonadotrophin (B-HCG) were normal. CT scan showed a 6 cm right testicular mass. With the impression of testicular malignancy, radical orchidectomy was performed. **Results:** The testicular tumour was composed of uniform cells with nests, trabecular and cords pattern of growth. The diagnosis was confirmed by immunohistochemical study (Chromogranin A, Synaptophysin, and CD56). **Discussion:** When encountering a testicular carcinoid tumour, further workup to exclude other primary sites, especially from gastrointestinal tract, is indicated. In general, localized primary testicular carcinoid tumours show good prognosis. Long-term follow-up is mandatory due to the potential of delayed metastases.

Poster 4. Haemoglobinopathies in the indigenous population of the east Malaysian state of SabahLailatul Hadziah Mohd Pauzy¹, Ezalia Esa¹, Nizamahani Mokhri², Yuslina Mat Yusoff¹, Pang Rong Yao¹, Nurul Amira Jamaludin¹, Zubaidah Zakaria¹¹Haematology Unit, Cancer Research Centre, Institute for Medical Research, Jalan Pahang, 50588 Kuala Lumpur, Malaysia;²Hospital Queen Elizabeth, Jalan Penampang, Penampang, 88200 Kota Kinabalu, Sabah, Malaysia

Introduction: The aim of the study is to examine the distribution of haemoglobinopathies in the indigenous population of Sabah where thalassaemia is most prevalent in Malaysia. **Methods:** A total of 645 blood samples were obtained from health clinics and hospitals all over Sabah for thalassaemia screening in the month of May 2013. High Performance Liquid Chromatography and Capillary Electrophoresis were used for analysing the haemoglobin subtypes. **Results:** The study included patients aged between 1 to 73 years old. The majority (97%; 624/645) were indigenous people and 94% of the total sample came from voluntary screening offered at primary care level via various government-promoted programs. 82% were female, mostly screened during their antenatal visit. 30% (193/645) of the sample were tested positive for; B-Thalassaemia trait (78%; 151/193), Hb E trait (10%; 20/193), Homozygous Hb E (2%; 4/193) and other haemoglobinopathies (7%; 13/193). The other 3% (5/193) of the abnormal results were inconclusive hence would require further molecular analysis. Among all the indigenous people screened, the Kadazandusuns had the highest occurrence of haemoglobinopathies (35%; 87/250), followed by the Muruts (33%; 15/45), Malays (29%; 19/65), other races (26%; 46/180) and the Bajau people (23%; 19/84). **Discussion:** Thalassaemia is prevalent in the indigenous population of Sabah and most people are asymptomatic. Government health clinics play a crucial role in promoting greater awareness of the disease via campaigns and screening programs as they are easily accessible and oftentimes are the first point of contact with the community.

Poster 5. Syndromic Approach: A New Platform in Microbiology Diagnostics

Kuan Chee Sian, Yew Su Mei, Ng Kee Peng

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Introduction: The challenges that have developed in the past 50 years in infectious diseases are enormous, including new disease threats, outbreak of foodborne illness, and occurrence of multidrug resistance. To successfully introduce highly multiplexed molecular diagnostic into the daily clinical algorithm, advanced multiplex polymerase chain reaction (PCR) technologies must be developed to affordably and simultaneously identify multiple pathogens including resistance mutations. Syndromic approach is a new infectious disease testing using a single reagent with more and more disease incorporated into the diagnostic algorithm to simultaneously detect the most important pathogens involved in a syndrome. This study aims to evaluate the ability of several syndromic approaches (multiplex PCR) to diagnose various infections. **Materials & Methods:** xTAG Respiratory Viral Panel FAST v2 was compared with conventional viral culture and immunofluorescence staining to detect viral etiologies of respiratory tract infections in 199 respiratory specimens. xTAG Gastrointestinal Pathogen Panel (GPP) assay was compared with culture, microscopy, and antigen-antibody methods to detect gastroenteritis-causing pathogens and toxins in 98 diarrheal samples. Comparative identification of bacterial and yeast pathogens was performed using multiplex PCR (FilmArray Blood Culture Identification panel) and biochemical assay (Vitek 2 assay) in 85 positive blood culture. FilmArray Meningitis/Ecephalitis panel was compared with culture and microscopy methods to identify pathogens from 26 meningitis patients. **Results:** The positive rate of these advanced molecular assays was higher as compared to conventional culture, immunofluorescence, and microscopy methods. Importantly, mixed infection caused by two or more pathogens were detected by these multiplex PCR, which would have been missed by conventional methods. Our results highlighted the superiority of these molecular assays and the implementation of these assay in hospital laboratories will provide rapid diagnosis of major infectious diseases of the respiratory tract, gastrointestinal tract, blood, and central nervous system.

Poster 6. Nephrotoxicity in chronic low dose organophosphate exposureSanda Aung¹, Nor Zamzila Abdullah², Norlelawati A. Talib³, Noriah Mohd Noor⁴, Norra Harun⁵, Zamzuria Mat Zainone⁶, Tariq Abdul Razak⁷

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Objectives: People are exposed to chronic low dose organophosphates (OPs) pesticides through agriculture and pest control activities. Apparently, there were significant epidemiological reports suggesting pesticides role in chronic kidney disease. This observation is yet to be confirmed with appropriate experimental model of chronic OPs exposure on animals. Thus, the aim of this study is to observe for histomorphological characteristics related to nephropathy in the kidneys of rats upon exposure to chronic low dose OPs. **Materials and Methods:** 24 males Sprague-Dawley rats were randomly divided into 3 groups of 6 rats each with Group 1 as a Control group, whilst Group 2 and Group 3 received subcutaneous vehicle (3% dimethyl sulphoxide + 97% v/v soy oil) and 18.0 mg/kg BW chlorpyrifos respectively, every other day for 180 days. After treatment, the rats were sacrificed and the right kidney was subjected to routine H&E examination and specific Masson-Trichrome and periodic-acid Schiff stain. **Results:** OPs exposed group (Group 3) exhibited significant histo-morphological abnormalities suggesting cell injury, apoptosis and degenerative changes in glomeruli and tubules. In contrast, the control groups 1 and 2 (vehicle) are spared. **Conclusion:** Chronic low dose OPs exposure induced nephrotoxicity. The exact mechanism of nephrotoxicity should be further investigated.

Poster 7. Solitary fibrous tumour of orbital region: A collection of case reportsNgan Kah Wai, Norlaila Binti Talib¹, Radzlian Bin Othman¹, Ruwaida A Rahim²

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Introduction: Solitary fibrous tumour (SFT) is a rare, benign, spindle cell tumour that is most commonly found in the visceral pleura. The orbit is one of the most common extrapleural sites of occurrence. **Materials & Methods:** Three cases of orbital SFT were retrieved from the database of Department of Pathology, Hospital Serdang. **Results:** The tumours occurred in one man and two women of the ages of 18, 21 and 32 respectively. All cases were presented as painless proptosis (4 months to 4 years). One of the patients was a case of first tumour recurrence. Histologically, all tumours were characterized by wavy spindle cell fascicles with patternless architecture. There was no atypia or pleomorphism, and mitoses numbers varied from 1-2/10HPF. The neoplastic cells were positive for CD34, CD99 and BCL 2. Resection margin were focally involved in all 3 cases. Mean duration of follow up was 22 months (8 months to 48 months). Two out of the three patients developed tumour recurrences after surgery. **Discussion:** We believe the high frequency of tumour recurrence is probably due to incomplete tumour excision. The findings are similar to other reports in English language journals.

Poster 8. Chronic myeloid leukemia with a μ -bcr (p230, e19a2) BCR-ABL1 fusion: a rare case with a good prognosis

Alifah Nadia Abu Hassan¹, Ezalia Esa¹, Abu Sufian Ahmad², Jian Yuan Cheng², Nor Rizan Kamaluddin¹, Puteri Jamilatul Noor Megat¹, Ahmad Zuhairi Abd Rahman¹, Nor Yuslina Mat Yusoff¹, Zubaidah Zakaria¹

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Introduction: The BCR-ABL1 fusion gene in chronic myeloid leukaemia (CML) is formed by juxtapositioning of the ABL1 gene on chromosome 9 into the BCR gene on chromosome 22. Most of the gene breakpoints occur at the major breakpoint cluster region (M-bcr) of the BCR gene. Cases involving the micro-bcr (μ -bcr) are infrequent. Here we describe a case of CML with μ -bcr BCR-ABL1 fusion gene. *Case presentation:* A 43-year-old man presented with one month history of abdominal distension. Clinically he was febrile and noted to have hepatosplenomegaly. He was found anaemic (haemoglobin; 8.3 g/dl) with slight thrombocytosis (platelet count; 520 x 10⁹/l). He had hyperleukocytosis (total of white cells count; 383 x 10⁹/l) with blast count of 13%. Bone marrow smear examination was consistent with CML in accelerated phase. His bone marrow cytogenetic displayed normal male chromosome while his fluorescence in-situ hybridisation had identified BCR-ABL1. Multiplex reverse transcriptase-polymerase chain reaction (RT-PCR) analysis was initially failed to detect any gene mutation; most probably due to sample degradation. However this method has ultimately detected a μ -bcr BCR/ABL1 gene with the breakpoint region at the exon 19 of BCR and exon 2 of ABL (e19a2, p230) on repeat sample. Result validation using direct sequencing analysis revealed the same findings. He responded well to hydroxyurea 2g twice daily in which, later on converted to Imatinib 400mg daily. His blood results improved tremendously with these treatments. However, patient became non-compliant to his medications and defaulted his treatments leading to disease progression and death. *Conclusions:* We concluded that patient with CML carrying μ -bcr showed a good prognosis with treatment as other type of μ -bcr breakpoints.

Poster 9. Impact of Molecular Diagnostics in Mycology Laboratory

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Introduction: The opportunistic fungal infections are increasing globally. The infections are associated with high morbidity and mortality in immunocompromised individuals. The challenge in managing fungal infections is the lack of fast-accurate identification of pathogens. The direct microscopy, fungal culture and histopathology have been recognized as the “gold standard” for the detection of fungal pathogens but these methods fail to accurately identify fungi to the species level. This study aims to introduce molecular methods and phylogenetic analysis to identify fungi and rare yeast species isolated from the clinical specimens. *Materials & Methods:* Sequence-based identification of fungi was performed by PCR amplification of internal transcribed spacer (ITS), small subunit of rRNA (SSU), and large subunit of rRNA (LSU). ITS-based phylogeny or multilocus phylogeny was performed based on Bayesian tree analyses. *Results:* For the past three years, we identified 1,660 fungal species from 3,307 specimens received. An ITS-based phylogenetic tree was further constructed to reveal the identity of fungi, with particular interest on dematiaceous fungi. Several rare yeast species such as *Quambalaria cyanescens* and *Metschnikowia* sp. were identified using multilocus phylogenetic analysis (combined ITS, SSU, and LSU), which would not able to be determined using culture, microscopy as well as the API 20C Aux yeast identification system. Additionally, we have constructed a taxonomic engine in FungalDB (http://codoncloud.com:85/FungalGenomeV2_1/) to identify fungal isolates by conducting a similarity search against our curated database, and an ITS-based phylogenetic tree will be generated for taxonomic classification.

Poster 10. An unusual cause of maternal mortality: ruptured aortic dissection due to cystic medial necrosis

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We present a case of ruptured aortic dissection, a life-threatening surgical emergency occurring in third trimester of pregnancy. Antenatally, the pregnancy was complicated by hypertension associated with transient proteinuria. She was treated with anti-hypertensive and the BP was monitored regularly. There were no symptoms of impending eclampsia during antenatal visits. At 38 weeks gestation, she woke up complaining of severe neck pain and chest discomfort. Her husband found her unresponsive a few minutes later. She was pronounced dead on arrival at hospital. Based on the antenatal history, differential diagnosis of pregnancy-induced hypertensive crisis, pulmonary thromboembolism and other common obstetric emergencies were entertained. Autopsy, however, revealed DeBakey type I aortic dissection with rupture at the root of the aorta resulting in haemopericardium and cardiac tamponade. Histopathology examination of the aorta showed features consistent with cystic medial necrosis. Ruptured aortic dissection is a diagnosis rarely considered in an obstetric setting. The incidence of aortic dissection in pregnancy was reported to be low. It is associated with significant morbidity and mortality for the mother and the foetus. Reported cases, present mainly in third trimester of pregnancy with some showing cystic medial necrosis-like changes on histopathology examination and patients had no other risk factors or any syndromic features. The findings led to the initial postulation that hormonal and

haemodynamic changes during pregnancy caused the weakening of the aortic wall. This hypothesis, however, does not explain the overall low incidence, the dissection occurring mainly in third trimester of pregnancy and not during labour when the haemodynamic changes are most pronounced. Genetic aetiology is a possibility with recent studies showing association between certain genetic defects and cystic medial necrosis in young female without syndromic features presenting with non-traumatic spontaneous aortic dissection.

Poster 11. Enhanced detection of Syphilis: REVERSE VS FORWARD: A Pilot Study in Donor Screening

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Introduction: The increasing syphilis rates in both high income and developing countries suggest that no country has developed an effective program to control syphilis. The most prominent contributing factor may be attributed to the lack of universal guidelines or algorithm on the laboratory methods for diagnosis of syphilis. Conventionally in our centre, syphilis has been diagnosed serologically with the application of a nontreponemal test for screening and a treponemal test for confirmation of the results. This is known as the traditional algorithm. However in recent years, multiple organizations have recommended the reverse algorithm, in which, an enzyme immunoassay test (EIA) or agglutination assay is used for screening followed by confirmation with a treponemal antigen test of a different type from the primary test. In our centre, the traditional algorithm was replaced with the reverse algorithm on the 1st of November 2014. Hence, this is a retrospective and prospective study for the screening results from November 2013 to November 2015 for syphilis on blood donor samples using two different algorithm. As well as our recommendation for the addition of a confirmatory treponemal testing to eliminate discordant results. *Results:* The findings of the study demonstrated that the conventional algorithm detected less syphilis cases and had a higher number of discordant results as compared to the reverse algorithm in syphilis screening in Blood Bank and the implementation of another assay can help reduce the number of discordant and contradicting lab results. This can be translated into better donor management for precious blood products.

Poster 12. Thalassemia and hemoglobin E screening among Aborigines in Kelantan

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Introduction: Thalassemia and hemoglobin E (Hb E) are common hemoglobin disorder that occurs throughout the world especially Asian countries. In Malaysia, much of the screening studies on this disorder are conducted on major ethnic groups such as in the Malays, Chinese and Indians. Therefore, data concerning thalassemia and Hb E from the aborigine population is scarce. Aim of study was to screen for Hb E and thalassemia among this population. *Materials & Methods:* Thus, we presented a cross-sectional study done among 52 aborigines from Gua Musang, Kelantan. β -thalassemia and Hb E were identified using high performance liquid chromatography (HPLC) and 4 common α -thalassemia deletions were characterized by a single tube-multiplex gap-polymerase chain reaction (PCR). *Results:* Overall frequency of thalassemia/hemoglobinopathies was 38.4% were Hb E and its interaction (90.1%) and α -thal (9.9%). *Discussion:* The knowledge of high frequency for Hb E among aborigines in Kelantan is important for their future health planning and management.

Poster 13. Uncovering the expanse of germline RB1 gene deletion using array-based comparative genomic hybridization (aCGH)

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Introduction: Retinoblastoma (RB) is the most common intraocular malignant tumour in children resulting from biallelic inactivation of the RB1 gene located in chromosome 13q14.2 with one case reported for every 14,000 to 22,000 live births. Molecular genetic testing service for the RB1 gene in IMR includes both PCR/Sanger sequencing and Multiplex Ligation-dependent Probe Amplification (MLPA) has successfully identified whole RB1 gene deletion in two patients (patient 1 & 2) and partial RB1 gene deletion in one patient (patient 3). In this work, we explored the impact of the large chromosomal deletion in these 3 patients using array-based comparative genomic hybridization (aCGH). *Materials & Methods:* aCGH was performed by using CytoSure ISCA + SNP array (4x180k) (Oxford Gene Technology, United Kingdom), and the result was analysed via Cytosure Interpret Software v4.8.32 (Oxford Gene Technology, United Kingdom). *Results:* The deletion sizes range from 17.67Mb (13q13.2-q14.2) in patient 1 to 3.46Mb (13q14.2-q14.3) and 4.26Mb (13q14.11-q14.2) in patient 2 and 3, respectively. The number of

deleted genes was 319, 64 and 83 in patient 1, 2 and 3, respectively. Besides RB, there were no other symptoms identified in these patients suggesting that other deleted genes were likely non-disease-causing. *Discussion:* Results of aCGH confirmed the MLPA finding especially on the deletion status of RB1 gene (whole/partial deletion). Furthermore, aCGH enabled detection of genome-wide deletion by providing both the deletion breakpoint and the genomic content of the deleted region. Application of aCGH is therefore recommended especially in RB patients with other underlying symptoms.

Poster 14. Familial antithrombin III deficiency in a Malay patient with arterial thrombosis: A case report

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Background: Antithrombin (AT) III deficiency is a rare autosomal dominant disorder. Patients with AT III deficiency has a significantly increase risk of thromboembolism, especially in the venous circulation. *Case presentation:* We report a 46-year-old Malay man, a chronic smoker presented with sudden onset of left hemiparesis at the age of 31 years old. Carotid Doppler ultrasound revealed a complete occlusion of the right common carotid artery and internal carotid artery. He had recurrent admissions for worsening of left sided hemiparesis due to a new right parietal cerebral infarct. Her sister was diagnosed as AT III deficiency when presented with deep vein thrombosis complicated by massive bilateral pulmonary embolism while on heparins. Physical examination of central nervous system revealed reduced muscle power with increased muscle tone over left upper and lower limbs. Blood investigation showed his full blood count, fasting lipid profile, liver function and renal function were within normal range. Thrombophilia study showed reduced AT III activity (38 µl/dl), similar finding as his sister; and normal results for protein C, protein S, activated protein C resistance and lupus anticoagulant assays. *Discussion:* Arterial thromboembolism is reported to have weak association with AT deficiency and not many cases have been reported so far. There is an epidemiological study that supports a role for antithrombin deficiency in arterial thrombosis. The study suggested that deficiency of antithrombin may be an independent risk factor for myocardial infarction (MI) that has been underestimated. Another study reported a nephrotic syndrome patient presented with right lower extremity arterial thrombosis associated with decreased levels of serum AT III.

Poster 15. Heparin Cofactor II and selected coagulation parameters in Malay male regular whole blood donors and first time blood donors: Any different?

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Introduction: Arterial event has been linked to the abnormal levels of procoagulant and anticoagulant factors. Adequate Heparin cofactor II (HCII) level may delay the cardiovascular co-morbidities. An estimate of 88% risk reduction of acute myocardial infarction in regular blood donors was reported. A study on HCII and other selected coagulation parameters between regular and first time donors was done to investigate the effect of regular donation from coagulation system point of view. *Materials & Methods:* A comparative study was done at Transfusion Medicine Unit, HUSM. Blood was taken from 77 healthy male whole blood donors. Age, race and gender matched samples were taken from regular donors (n=39) and first time donors (n=38). All the samples were analyzed for D-dimer, fibrinogen, PT, APTT and HCII. *Results:* Using independent t-test, no significant different for all the tests between these two groups, except APTT (P<0.05). There was a positive correlation between HCII (anticoagulant) and fibrinogen (procoagulant) levels (r=0.349, P<0.01) in both groups. *Discussion:* Regular blood donation showed no significant effect for HCII when compared with the other non-regular counterpart. The difference in APTT between the 2 groups is probably related to variations of clotting activity of no clinical significance. This study supports at least no added risk to the regular blood donors as a result of major coagulation changes. However this consideration is based on the small sample size, requiring more studies in future.

Poster 16. Could elevated IgE levels among school children despite non-infestation with geohelminths attributed to the haze in Malaysia?

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Objectives: The prevalence of allergic diseases and parasitic infections are high in Malaysia. We aimed to assess the serum IgE levels and eosinophil counts in school children from an urban community of Malaysia and to investigate possible relationship between these values and geohelminthic infestation. *Methods:* Blood and stool specimens were collected from 33 school children aged 10 to 11 years from Kinta district of Perak. Blood specimen was processed for differential blood counts and serum IgE estimation and stool specimen for complete parasitological screening. *Results:* The median Ig E level among the study participants was observed to be unusually higher than the normal reference range. The median IgE level was higher in males

compared to females, though these values were not statistically significant ($p=0.71$). All the participants had eosinophil counts within the normal limits and there were no geohelminths observed. There was no correlation between the IgE levels and the eosinophil counts. *Discussion:* The results support the hypothesis of inverse relationship between the elevated IgE levels and geohelminth infections. The elevated levels of IgE while other parameters remaining normal could possibly be attributed to the haze that prevailed in Malaysia during a three month period in 2015.

Poster 17. Hedgehog Signalling Molecule, SMO is as a Poor Prognostic Marker in Bladder Cancer

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Introduction: Hedgehog signalling pathway is important for growth and patterning during embryonic development. Constitutive activation of Hedgehog pathway can lead to various types of malignancies including medulloblastoma, basal cell carcinoma, gastrointestinal, breast and prostate cancer. Worldwide, bladder cancer ranks the eleventh most common malignancy. It is the 7th most common cancer in men and the 19th most common cancer in women. *Methods:* The purpose of this study was to investigate the immunohistochemical expression of SMO in 112 bladder cancer cases from Hospital Kuala Lumpur and determine their association with demographic and clinicopathological parameters. *Results:* SMO was expressed in the cytoplasm of all cases of bladder cancer. 6 cases (5.4%) showed low expression, while 106 cases (94.6%) showed high expression. Positive expression of SMO protein was correlated with a few variables which include grade and stage, lymph node metastasis and distant metastasis. SMO expression showed statistically significant association with higher grade ($p=0.001$) and higher stage ($p=0.042$) of bladder cancer. SMO expression also showed borderline association with lymph node metastasis ($p=0.056$). *Conclusion:* These findings indicate that SMO expression may be a poor prognostic marker in bladder cancer.

Poster 18. Bakakuk

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Sabah is one of thirteen states in Malaysia. The state together with Sarawak, Brunei and Kalimantan, Indonesia is located in Borneo, the third largest island in the world. Most of the island is still densely forested with diverse wildlife. For centuries, villagers living in the forest or at the edge of the forest hunted wildlife as a source of meat, for sport and in recent times, increasingly for commercial purposes. Hunting in unprotected forest in Sabah is permitted with license issued by the Sabah Forestry Department. However, the selling and owning of firearms is strictly regulated under the Malaysian Law. Villagers may apply at the local Police Station for a firearm license for the purpose of protecting their farm from foraging animals and birds. However, the cost of owning a gun is prohibitive for most villagers. Many of them resort to owning illegal home-made firearms. There are two types of home-made firearms found in Sabah, 'Bakakuk' and 'Ginsuk'. 'Bakakuk' is shotgun-like firearm. The other type, 'Ginsuk' is a musket-like firearm. 'Bakakuk' is made of improvised materials such as steel pipe, wood, rubber slippers and other locally sourced materials. The ammunition is cartridge that can be purchased from licensed dealer. The use of re-cycled and home-made cartridge is not uncommon. Most of the firearm deaths seen in Queen Elizabeth Hospital, Sabah are due to 'Bakakuk'. The majority of these cases are hunting accidents, with an occasional homicide but rarely suicide.

Poster 19. Identification of *Bukholderia pseudomallei*: Molecular versus conventional methods

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Introduction: *B.pseudomallei* is the cause of melioidosis, a severe and potentially fatal disease of humans and animals. It is endemic in Southeast Asia and Northern Australia. It is found in soil and surface water. Identification of *B.pseudomallei* is crucial to ensure proper treatment regime receipt by the patients. However, identification of the organisms is a challenge as it exhibits almost similar reaction towards biochemical tests with other organisms in the family *Bukholderiaceae* such as *B.cepacia* that is listed under the same genospecies. Therefore, it is recommended that supplemental biochemical tests or molecular methods to be added to help in the identification of the organism. The aim of this study was to determine the possibility of mis-identification of *B.pseudomallei* if laboratory based the process only on conventional biochemical tests. *Materials & Methods:* A total of 203 suspected *B.pseudomallei* suspected isolates were collected. The organisms were identified using API 20NE or Vitek2 Compact system (bioMe'rieux, France). Additional conventional in-house biochemical tests were added. Further confirmation was achieved by molecular method using specific primers targeting the 16sRNA region for *B.pseudomallei*. *Result:* Discrepancies in the results were noted in 12 isolates (5.9%) that were confirmed as *B.pseudomallei* by molecular method. Additional biochemical tests such as arginine dehydrolase and lysine dehydroxylase were not helpful. *Discussion:* The use of

conventional biochemical tests solely for identification of *B.pseudomallei* may result in mis-identification of some of the isolates. Molecular method may overcome this problem. It is less time consuming and labour intensive than conventional methods in the identification of *B.pseudomallei*.

Poster 20. Serotype distribution and antibiotic resistance of *Streptococcus pneumoniae* isolates from pediatric patients in Malaysia

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Introduction: The emergence of antibiotic resistant *Streptococcus pneumoniae* strains has been increasingly reported and is alarming since pneumococcal infections are the major cause of global morbidity and mortality. In this study we report the serotype distribution and antimicrobial susceptibility of *S.pneumoniae* isolates among pediatric patients in Malaysia. This information could provide better management, prevention and treatment strategies for pneumococcal disease in Malaysia. **Materials & Methods:** A total of 139 *S.pneumoniae* isolates were collected from pediatric patients under a surveillance programme in Malaysia from the year 2014 to 2015. Capsular serotypes were identified by the Quellung reaction test (SSI, Copenhagen, Denmark). Drug susceptibility and resistance was determined by minimum inhibitory concentrations (E-test; AB Biodisk, Solna, Sweden). **Results:** Seventeen serotypes were identified among the 139 *S.pneumoniae* isolates that were collected. Prevalent serotypes were 19F (22.3%), 14 (20.1%), 19A (10.1%), 23F (10.1%) and 6A (6.6%). The isolates showed highest resistance to erythromycin (56.5%), followed by tetracycline (47.8%), trimethoprim/sulfamethoxazole (18.3%), cefotaxime (13.9%) and ceftriaxone (11.3%). The isolates showed very low resistance to penicillin, in which only one isolate (serotype 19F) from 2015 was resistant. *S.pneumoniae* isolates of patients five years or younger showed resistance to erythromycin and tetracycline significantly higher at 64.0% and 48.0% respectively compared to other age group. **Discussion:** Prevalent serotypes among the *S.pneumoniae* clinical isolates were 19F, 14, 19A and 23F. The 13 valent pneumococcal polysaccharide conjugate vaccine (PCV-13) covered the majority of the serotypes identified in this study. The results from this study provide important data on *S.pneumoniae* serotype distribution and immunization coverage that could influence vaccination strategies in Malaysia. The data may also provide clinical guidance for the use of antimicrobial agents to avoid the emergence of MDR in *S.pneumoniae*.

Poster 21. Neutrophil profile as a screening tool for early neonatal sepsis screening: a preliminary study

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Introduction: Combinations of multiple laboratory parameters could give better prognostic value in evaluating neonatal sepsis. During sepsis, neutrophils are the first defence line in recruiting dendritic cells, phagocytes and lymphocytes. Activated neutrophil produced more protein and reactive oxygen intermediates which depicted by increased in nucleic acid content (Linssen, Aderhold *et al.* 2008). In addition, immature neutrophil was associated with higher level of nucleic acid as well (Armeth and Menschikowki 2015). The elevation can be quantitated by utilizing Sysmex XE-5000 (Sysmex Corporation, Kobe, Japan). **Materials & Methods:** A cross sectional study was performed in HUSM involving 44 neonates. The samples were divided into two groups which were group 1 (healthy neonates, n= 34) and group 2 (sepsis, n= 10). Blood from group 1 was collected from cord blood. For group 2, the blood samples were from cord blood or peripheral blood collected from NICU. Neut-x (granularity of neutrophil) and neut-y (nucleic acid content) were examined by using Sysmex XE-5000. The results were further analysed by using ROC curve and t-test at p value of 0.05. **Results:** Neut-X value showed no significant difference between healthy and sepsis neonates with (p > 0.05). Neut-X had high sensitivity (90%) but low specificity (44%). Meanwhile for Neut-Y, there was significant difference between the two groups (p < 0.05) with sensitivity and specificity of 91% and 97% respectively. **Discussion and conclusion:** From this study, Neut-Y showed significant elevation in neonatal sepsis. Thus it can be considered as an additional marker for early neonatal sepsis screening.

Poster 22. Metastasis within a metastasis to the thyroid: A case report

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Introduction: Metastatic disease involving the thyroid gland is uncommon. Solitary thyroid metastases from various primary sites particularly kidney, lung, and breast had been previously described. To the best of our knowledge, metastases from two different primaries at the same occurrence have never been documented hitherto. Here, we report the first case of invasive breast carcinoma metastasized within a metastatic renal cell carcinoma (RCC) in the thyroid. **Case report:** A 58-year-old woman with history of synchronous malignancies of the breast and kidney, presented with a 5cm-left thyroid nodule eight years after curative

surgery (mastectomy and nephrectomy) and chemotherapy. Total thyroidectomy with selective node dissection was performed. Grossly, the thyroid appeared lobulated, weighing 82grams. Serial sections revealed multiple firm, yellowish tumour nodules with adjacent unremarkable thyroid tissue. Histologically, the tumour composed of two populations of malignant cells. One of them arranged in nested pattern separated by rich capillary vascular network and displayed hyperchromatic nuclei, inconspicuous nucleoli, and abundant clear cytoplasm. Within them, a second population of malignant cells were noted, arranged in small clusters. They demonstrated marked nuclear pleomorphism, vesicular nuclei, prominent nucleoli, and eosinophilic cytoplasm. Immunohistochemically, these two malignant cell populations revealed a mutually exclusive expression of oestrogen receptor and CD10, consistent with a diagnosis of synchronous metastases from invasive breast carcinoma of no special type and clear cell RCC to the thyroid. *Conclusion:* Accurate diagnosis of a secondary involvement of the thyroid from a remote primary malignancy is crucial for appropriate therapeutic decisions. Immunohistochemistry stains are helpful in equivocal cases.

Poster 23. The relationship between galectin-9 expression in tumor tissues and metastases in breast cancer

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Introduction: Breast carcinoma is the most common devastating malignant tumor. Galectin-9 has been described as a novel prognostic factor with antimetastatic potential in breast cancer. The aim of this study was to determine the expression of Galectin-9 in tumor tissue and to correlate its expression with distant metastasis and other specific tumor characteristics. *Materials & Methods:* Two hundred retrospective mastectomy specimen of infiltrating ductal carcinoma at University Kebangsaan Malaysia Medical centre were studied. All the cases were tested for Galectin-9 expression by immunohistochemistry and evaluated by histochemical score (HSCORE). *Results:* Most of the carcinomas were 2-5 cm in size, grade II was the most common tumor grade and stage II (43.5%) was the most common stage. Axillary lymph node metastases were seen in 64.5% of the cases. Seventy-six (38%) of the cases showed distant metastases and bone (28%) was the common site of metastases. Our results showed that most of tumors (67.5%) were Galectin-9 positive, out of which 33.3% showed distant metastases. On the other hand, the 65 cases with negative Galectin-9 expression showed 47.7% with distant metastases. There was no inverse correlation between Galectin-9 expression and presence of distant metastasis ($p = 0.50$). *Discussion:* Axillary lymph nodes metastases and high tumor grade were significantly associated with distant metastases ($p = <0.001$ & $p = 0.038$ respectively). While, Galectin-9 is not a reliable prognostic marker in prediction of distant metastases.

Poster 24. Prevalence of primary and secondary dengue in UKM Medical Centre

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Introduction: Dengue has been a public health menace since the 1950s and it is endemic in Malaysia. The aims of this study were to determine the prevalence of both primary and secondary dengue in UKM Medical Centre and if the acute dengue classification (i.e. primary vs. secondary) can be predicted from common haematological and/or biochemical parameters. *Materials & Methods:* This study was conducted from January to June 2015 and involved 1,774 patients who were clinically suspected to have dengue. The presence of anti-dengue IgM in isolation indicated primary infection and any reactive anti-dengue IgG result indicated secondary dengue. Results for haematological and/or biochemical parameters were retrieved from the hospital's laboratory information system. *Results:* Out of the 1,774 patients analysed, 1,153 (64.9%) had serological evidence of acute dengue. Among these 1,153 patients, 516 (44.8%) were diagnosed with primary dengue and 471 (40.8%) with secondary dengue. A total of 166 (14.4%) patients could not be classified as they were NS-1 antigen-reactive but without anti-dengue antibody results. Patients with primary dengue had a significantly lower mean white cell count ($4.3 \times 10^9/L$ vs. $5.6 \times 10^9/L$; $p < 0.01$) while those with secondary dengue had a significantly lower mean platelet count ($73 \times 10^9/L$ vs. $103 \times 10^9/L$; $p < 0.01$). *Discussion:* In UKM Medical Centre, the prevalence figures for primary and secondary dengue are comparable. Thus, in the absence of serological diagnosis, patients with significant thrombocytopenia should be considered to have secondary dengue and subjected to closer monitoring due to the higher risk of complications in secondary dengue.

Poster 25. Evaluation of an automated immunofluorescence reader for anti-nuclear antibody test in UKM Medical Centre

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Introduction: Recently, automated immunofluorescence (IF) analyzers have been introduced to read the anti-nuclear antibody (ANA) HEp-2 IF slides. Currently in UKM Medical Centre, ANA-IF result is recorded through direct observation by microscopist using UV light microscope. This study was conducted to evaluate the performance of the newly introduced automated

immunofluorescence reader (NOVA-view) in comparison to manual reader. *Materials & Methods:* Ninety-eight consecutive positive ANA ELISA tests between 1st January 2016 until 31st March 2016 were subjected to further analysis by ANA-IF. The IF results were analyzed by two experienced microscopists and at the same time by NOVA-view. *Results:* Positive-negative agreement between NOVA-view and manual reader was achieved in 90 samples (91.8%). Further statistical analysis showed strong agreement achieved between NOVA-view and manual reader in determination of positive and negative samples ($\kappa=0.833$), and in determination of ANA-IF patterns ($\kappa=0.810$). *Discussion:* Automated ANA-IF reader (NOVA-view) showed good agreement with manual reader in differentiating between positive and negative samples as well as in recognizing IF pattern on HEP-2 cell slide. The use of automated ANA-IF reader is promising and perhaps may help to standardize IF reading in the future.

Poster 26. Human brucellosis in Malaysia: report on diverse laboratory diagnosis

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Introduction: Brucellosis is a zoonotic disease showing different clinical features and is diagnosed using several methods. In Malaysia, the disease is often reported as sporadic cases associated with the consumption of unpasteurized milk. *Materials & Methods:* Isolates from 44 clinical cases were subjected to identification using standard microbiology procedures and 18 sera of these cases were screened for IgM and IgG antibody detection by enzyme-linked immunosorbent assay (ELISA) and total anti-Brucella antibodies detection by Brucellacapt (Viracell, Spain). The clinical samples received from 2012 to 2015. The DNA of 44 isolates was subjected to conventional polymerase chain reaction (PCR) and High-resolution Melting (HRM) analysis. *Results:* Forty-four isolates identified as Brucella sp. using standard microbiological methods and conventional PCR. HRM analysis identified 41 cases as Brucella melitensis and 3 cases as Brucella canis. Thirteen (72.2%) cases were positive for IgM and IgG antibodies and Brucellacapt results showed positive titers of 1:1280 (1 case), 1:2560 (1 case) and $\geq 1:5120$ (11 cases) respectively. However three (16.7%) cases were positive for IgG only while two (11.1%) cases were positive for IgM only and their Brucellacapt titers ranged between 1:1280 and $\geq 1:5120$. In 2014, three cases showed negative sero-conversion for Brucellacapt testing but the IgM and IgG antibodies remained elevated even after completion of treatment. *Discussion:* In Malaysia, human brucellosis is reported yearly and the cases are mostly sporadic. Therefore laboratory diagnosis is important for treatment. Isolation of the organism is the gold standard for diagnosis while serological testing are alternate methods which not only helped to diagnose but also as a follow-up of Brucella disease activity.

Poster 27. Clinical factors that influencing platelet increment after platelet transfusion in the thrombocytopenic patients in Hospital USM

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Introduction: Platelet transfusion is indicated in thrombocytopenic patient with bleeding or at high risk of bleeding. This study aimed to determine the patient and disease factors that influence post-transfusion platelet increment. There is no local data available regard this area of knowledge yet. *Materials & Methods:* This was a retrospective cohort study that included 80 thrombocytopenic patients who received a total of 283 platelet transfusion in our center for 2 years period. The pre and post transfusion platelet counts were measured by using Sysmex XE5000 and the platelet corrected count increment (CCI) was calculated at 1 and 24 hours post transfusion. Poor increment was defined as CCI < 7500 m²/μL at 1 hour and/or CCI < 4500 m²/μL at 24 hours post transfusion. All data related were obtained from medical record. Simple (SLR) and multiple logistic regression (MLR) test were used for statistical analysis and p value of < 0.05 was considered as significant. *Results:* Majority of the transfusion event (66.8%) had good platelet increment. The mean of the CCI in the good and poor platelet increment was 23482.12 and 1570.71, respectively. SLR and MLR showed only disseminated intravascular coagulopathy (DIC) was a significant factor that influencing platelet increment with 3.81 unadjusted odds ratio (OR) (p < 0.001, 95%CI = 2.07, 7.02) and 4 adjusted OR (p < 0.001, 95%CI = 2.14, 7.45) of poor CCI compare to non-DIC, respectively. There was no significant different between platelet increment and age, gender, race, weight, malignancy, fever and splenomegaly. *Discussion:* This study showed only DIC is the significant factor that contributed for poor platelet increment in which consistent with previous study.

Poster 28. Droplet digital PCR for the detection of low-yield nucleic acid targets: utility in diagnosing paucibacillary tuberculosis

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Introduction: Low-target-abundance biological samples such as CSF and urine can contain low numbers of Mycobacterium tuberculosis bacilli, giving rise to false-negative results. Although the polymerase chain reaction (PCR) has improved detection time and rate of tuberculosis (TB), traditional PCR assays used have sensitivities of ~ 50%, require relatively high bacterial loads, and are susceptible to inhibitors. A more reliable and sensitive method is essential when dealing with critical/low-volume samples, such as in disseminated or paucibacillary TB. This study describes a droplet digital PCR (ddPCR) assay for the sensitive detection and quantification of M. tuberculosis from different clinical sample types. **Materials & Methods:** 37 clinical samples from patients suspected with TB were screened for the M. tuberculosis IS6110 gene and the human beta-hemaglobin gene as an internal control using quantitative real-time PCR (qPCR) and droplet digital PCR (ddPCR). In the ddPCR assay, a single PCR sample was partitioned into 20,000 nanodrops where amplified targets in each droplet were individually measured. **Results:** ddPCR was able to detect and directly quantify even as low as 1 copy number of the IS6110 gene in samples found positive by qPCR, and in addition eliminated the need for a standard curve. **Discussion:** ddPCR's sensitivity and accuracy would be useful in enhancing diagnosis of samples that are critical; this is especially essential when attempting to detect low concentrations of target genes in a complex background such as in clinical samples. Furthermore, this sensitive assay would assist in ruling out infection with a higher degree of confidence.

Poster 29. Histological diagnosis of intravascular leiomyosarcoma of the femoral veinMuhammed T Osman¹, Anshoo Agarwal², and Gaurav Singal³*¹Department of Pathology, Faculty of Medicine and Defence Health, National Defence University of Malaysia, Kuala Lumpur, Malaysia; ²Department of Pathology, RAK Medical and Health Sciences University, United Arab Emirates; ³Ivy Hospital, Mohali Chandigarh, India*

Introduction: Malignant tumors arising from venous walls in the lower extremities are uncommon and intravascular leiomyosarcoma represents only a small proportion and rare of soft tissue leiomyosarcoma. All publications in the literature are of small clinical series or case reports. **Case report:** We present a case of primary leiomyosarcoma of the femoral vein in a 40 year old man; which is a rare lesion with less than 40 cases reported. The patient presented with swelling and localized leg pain. The diagnosis was made histopathologically, the tumor was resected, vascular reconstruction was performed, and for postoperative radiation therapy and chemotherapy patient was referred to the oncologist. **Conclusion:** Primary leiomyosarcoma of a major peripheral artery is extremely rare. It requires extreme degree of careful clinical examination, high accuracy of imaging studies and special histopathological approach examination. This report shares the clinical presentation, histopathological findings, treatment, and prognosis in these patients.

Poster 30. Damaged pancreatic tissue caused by alloxan-induced diabetes mellitus can be repaired by oral cinnamonMuhammed T Osman¹, Anshoo Agarwal², and Samir H Ali³*¹Department of Pathology, Faculty of Medicine and Defence Health, National Defence University of Malaysia, Kuala Lumpur, Malaysia; ²Department of Pathology, RAK Medical and Health Sciences University, United Arab Emirates; ³Al-Yarmook Teaching Hospital, Baghdad, Iraq*

Introduction: Cinnamon has been widely recognized as hypoglycaemic agent against diabetes mellitus. This study aimed to investigate the potential histological repairing ability of damaged pancreatic tissue due to alloxan-induced diabetic rats. **Material & Methods:** Diabetes was induced in 24 male Albino rats using alloxan (120mg/kg intraperitoneal). Four groups (n=6 each) received or not suspensions of cinnamon (50mg/kg and 100mg/kg OD orally). Body weights, fasting blood glucose, and serum insulin levels were measured. All biochemical results were compared with cinnamon effects on pancreatic histological changes. **Results:** Diabetes decreased serum insulin due to damaged Langerhans islet cells, however, treatment of diabetic rats with cinnamon up to 30 days, significantly increased serum insulin and reduced blood glucose level. Moreover, cinnamon-treated rats with a low dose showed that the shape of pancreatic islets cells relatively irregular with some normal cells. Meanwhile the cinnamon-treated with a high dose showed considerable repairing effects and islets cells looks like normal. **Discussion:** The biochemical and histological findings suggested that cinnamon extract has therapeutic and protective ability against alloxan-induced diabetic rats. The hypoglycaemic effect observed could be due to high repairing ability on pancreatic tissues leading to increased insulin levels. Hence, cinnamon may be useful in the treatment of diabetics.

Poster 31. Zygomycosis: A need for early detection

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Introduction: Rhino-orbital-cerebral mucormycosis (ROCM) is a rare, acute and aggressive fungal infection which rapidly fatal if not recognised early and treated promptly. It always occurs among immunologically or metabolically compromised individuals, especially diabetes mellitus. Pathologists always play a crucial role as biopsies are the only confirmation tool of diagnosis as the disease spreads rapidly. **Case report:** We report a case of 69 years old Chinese lady with hypertension and diabetes mellitus presented with progressive left sided facial swelling and pain. Physical examination revealed erythematous, congested left facial region, left eye ectropion, left nasal crusting and left side gingival abscess. Patient underwent drainage of the abscess and culture revealed fungal infection. Subsequent imaging revealed polypoidal mass involving paranasal sinuses with osteomyelitis of left zygoma and base of skull. Patient underwent multiple debridements and tissue HPE is consistent with presence of non caseating granuloma with broad, non-septated, hyphae suggestive of zygomycosis. Patient currently is on IV Amphotericin B and clinically remains well. **Discussion:** Mucormycosis is caused by a fungus from the family mucorales. *Rhizopus oryzae* species accounts 60% of all forms of mucormycosis and 90% of ROCM. These pathogens are ubiquitous spore forming saprophytes, growing in decaying matter and invade host tissues causing infection, thrombosis and necrosis. Non-specific symptoms cause difficulty in early diagnosis. Histopathological examination (HPE) showing aseptate, long broad, slender, right angled branching hyphae is pathognomonic of mucormycosis and gold standard diagnostic tool. Further imaging is required to evaluate the disease extension. Early initiation of IV Amphotericin B with extensive surgical debridement improves survival rate upto 83%. **Conclusion:** Mucormycosis is difficult to treat. Early diagnosis with aggressive medical and surgical interventions are necessary to stop disease progression. So, a multidisciplinary team work among surgeons, physicians and pathologists is essential to reduce morbidity and mortality from mucormycosis.

Poster 32. Double Identity – A phenotypic Male with Persistent Mullerian Duct Syndrome (PMDS) and a SeminomaChew Bee See¹, Rosna Yunus¹, Khoo Nelson², Noor Ashani Md Yusoff²¹*Department of Pathology, ²Department of Urology, Kuala Lumpur Hospital, Malaysia*

Introduction: Persistent Mullerian duct syndrome is a rare disorder of male pseudohermaphroditism, an intersex condition characterized by persistent Mullerian duct structures and a cryptorchid testis or testes. **Case Report:** A 28 year old otherwise phenotypically normal male Navy Officer has been married for 2 years presented with infertility. He had a history of bilateral undescended testes since birth and right orchidopexy was done at the age of one year old. On clinical examination, he has a small right testis with bilateral inguinal scars and left testis was not identified. MRI abdomen-pelvis showed an intra-abdominal left testis attached to a tubular-like structure. Laparoscopic exploration was performed, intraoperatively the right testis was found in the right inguinal canal, the left testis was found to be intra-abdominal and grossly appeared abnormal as it was attached to a tubular-like structure. The left intra-abdominal testis along with the attached tubular structure was excised and right testicular biopsy was done. **Result:** Histopathological examination revealed a uterus with atrophic endometrium, well-formed endocervical glands, seminal vesicle, epididymis and vas deferens tissues side by side. The right testicular biopsy showed reduced spermatogenesis. The left intra-abdominal testis showed the morphology of a classical seminoma with intratubular germ-cell neoplasia. Chromosome studies demonstrated a normal male karyotype 46XY. **Conclusion:** Recognition of PMDS is important for prognosis as its tendency towards malignant transformation of cryptorchid testis and potential of infertility. Therefore, early detection of PMDS is crucial in order for interventions and measures to be taken to prevent malignancy and infertility.

Poster 33. A comprehensive molecular analysis and identification of rare HbE/beta thalassemia mutations in West MalaysiaNur-Aisyah Aziz¹, Muhammad Yusri Fauzi¹, Syahzuwan Hassan¹, Faidatul-Syazlin A. Hamid¹, Rahimah Ahmad¹, Mohamed Saleem², Hishamshah Ibrahim³, Thiyagar Nadarajaw⁴, Jameela Sathar⁵, Tan Swee Looi⁶, Aisyah Muhammad Rivai⁷, Yeoh Seoh Leng⁸, Che Hadibiah Che Mohd Razali⁹, Azirawati Johari¹⁰, Tan Hooi Kheng¹¹, Zubaidah Zakaria¹

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Introduction: The clinical diagnosis of HbE/beta thalassemia has been challenging because of its remarkable variability in the patient presentations. DNA analysis has been recommended to distinguish the HbE-related disorders. Here we report characterization of HbE/beta thalassemia mutations using DNA-based techniques in the patients with clinical impression of HbE/beta-thalassemia from West Malaysia. **Materials & Methods:** Ethical approval code NMRR-12-1119-13926. We reviewed 300 HbE/beta thalassemia cases from nine hospitals between Sept-2013 and Jan-2016. Informed consent was obtained prior to ~2.5 mL blood taking and gDNA was isolated using commercial kit. Later, MARMS-PCR and MGap-PCR were done to detect 21 common point-mutations and eight deletions respectively. The MLPA and sequencing were adopted if presence of uncommon mutations were suspected. **Results:** Twenty-two types (18 β^E/β^0 and 4 β^E/β^+) of compound HbE/beta thalassemia mutations were detected in 92% (n=274/300), whereas 8% (n=24/300) and 0.7% (n=2/300) were confirmed to be non-HbE/beta-thalassemia and HbE/beta variant respectively. Five most common compound heterozygotes-HbE were IVS1-5(G>C), Codon 41/42(-TTCT), IVS1-1(G>T), Codon 17(AAG>TAG) and IVS2-654(C>T). Ten rare beta-globin mutations detected in this study were nine β^0 [Codon 35 (TAC→TA-), IVS 1-2 (T>C), Codon 123/124/125 (-8bp), IVS 1 25bp del, Codon 41 (TTC>TT-), Codon 35 (TAC>TAA), 619bp del, Codon 6 (GAG>G-G), Codon 30 (AGG>ACG)] and one β^{variant} [Codon 98 (GTG>GGG)]. **Discussions:** DNA-based techniques implemented in this study have effectively facilitated the characterization of HbE/beta thalassemia mutations. Notably, more variables of β^E/β^0 -allele were seen in this study compared to β^E/β^+ -allele. This study provides updates on molecular heterogeneity and support recommendation for definitive diagnosis of HbE/beta thalassemia in West Malaysia.

Poster 34. A preliminary study on significance of borderline haemoglobin A₂ level among Kelantan populations

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Introduction: About 3-5% of Malaysians are thalassemia carriers. Haematological diagnosis based on parameters is sometimes presumptive thus DNA analysis becomes necessary. Haemoglobin A₂ higher than 4.0% is classic marker of β -thalassemia carriers. Individuals with 'gray zone' of borderline HbA₂ (3.0-3.9) between normal and β -thalassemia carrier are difficult to be identified. This study was carried out to determine the proportion of borderline HbA₂ among samples taken for haemoglobin analysis in Hospital Raja Perempuan Zainab. Their haematological profiles (MCV, MCH, RBC, RDW, platelets) have been analysed. Later the proportion of borderline HbA₂ samples who has alpha or beta gene defect will be determined by molecular method and haematological profiles of different type of genotypes tested will be studied. **Materials & Methods:** A cross sectional study was conducted from 01.01.2015-31.12.2015. The haematological profiles of these samples were analysed and samples will be send to HUSM for PCR. Detection of beta gene mutation is by Multiplex ARMS-PCR while alpha gene defect by multiplex gap PCR. **Results:** 244 out of 9136 samples (2.7%) have borderline HbA₂. From 244 samples, 48% has low haemoglobin, 42.7% has low MCV, 52.7% with low MCH, 98% have normal platelet and 38.2% with normal RDW. 51% has high RBC. The DNAs of all samples have been extracted. In completing this study, molecular test will be done to detect alpha or beta gene defect and haematological profiles will be analysed again. **Discussion:** Significance of borderline HbA₂ couldn't be compromise since our data showed features suggestive of thalassemia thus the necessity to investigate these cases at molecular level.

Poster 35. An observation: recovering viable but non-culturable isolates

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Introduction: Inappropriate storage of isolates will result in loss of valuable resources particularly for research purpose. For long-term storage, these isolates are kept in vacuum vials or nitrogen tank that can extend the viability for decades. Non-fastidious bacteria can easily grow on enrichment medium such as blood agar (BA) and Tryptic Soy Broth (TSB). In this study, we observed the recovery of viable but non-culturable (VBNC) Burkholderia sp. and pseudomonas sp. that had been preserved for 20 years. **Material and methods:** Two 20 year-old freeze-dried vials, B304 and B305 were grown on BA and in TSB at 37°C. The viability was checked for 10 days. The broth became turbid and there was discolouration on BA but no colony observed. 10 μ l of the turbid broth was taken and sub-cultured on fresh BA. A 1cm² of day 10 BA culture was sliced out and incubated overnight in fresh TSB at 37°C; non-inoculated as the negative control. The viability was checked by subsequent inoculation on BA and Ashdown agar (ASH) incubated overnight at 37°C. **Results and discussion:** There was no growth observed from the broth whilst creamy, dried, wrinkled colonies (IMRB304) and greyish, mucoid colonies (IMRB305) were observed on BA and purple colonies on ASH. The colonies were oxidase positive and gram negative rods at 100x magnification. API 20 NE V8.0 showed B304 as B.pseudomallei and B305 as Pseudomonas sp.. Our experience had proven that a step further by blood enrichment would be able to recover VBNC isolates.

Poster 36. An Unusual and Un-expectable Diagnosis of a Breast LumpChew Bee See¹, Noraini Mohd. Dusa¹, Daphne Anthonysamy², Rafli Ruzaire Awang²¹Department of Pathology, ²Department of General Surgery, Kuala Lumpur Hospital, Malaysia

Introduction: Dedifferentiated liposarcoma is frequently seen in the extremities and retroperitoneum, it is rarely seen in the head and neck and inguinal region. Involvement of the chest wall is reported to be rare, approximately 3%. *Case report:* A 64 year old woman presented with one month history of a right breast lump. She had a history of lymphoma diagnosed 16 years ago in which bone marrow transplant was performed 6 years ago. On clinical examination, a hard fixed mass measuring 6x6cm was felt in the right chest wall. Mammography and ultrasound examination revealed a large hard solid hypoechoic lesion of the right breast. Chest computed tomography (CT scan) showed a deep seated enhancing mass underneath of the right breast attached to the pectoralis and intercostal muscles. Right mastectomy and axillary clearance, resection of right 3rd and 4th rib and right chest wall reconstruction was performed. *Result:* Histopathological examination revealed a tan- coloured multinodular solid tumour with focal yellowish and glistening cut surface within the pectoralis muscle. Microscopic examination revealed a dedifferentiated liposarcoma consisting of usual well-differentiated liposarcomatous element and high grade spindle cell sarcomatous element. The patient had no significant post-operative complication and had received first cycle of adjuvant chemotherapy. *Discussion:* Dedifferentiated liposarcoma has poor prognosis with risks of local recurrence and distant metastasis and the survival rate decreases in the presence of distant metastasis, therefore complete surgical resection with wide tumor-free margins and long term follow up is recommended.

Poster 37. Factors affecting autologous peripheral blood haemopoietic stem cell collections in multiple myeloma patient in Hospital Universiti Sains MalaysiaMohd Nazri Hassan¹, Wan Suriana Wan Ab Rahman², Noor Haslina Mohd Noor¹, Rapiaah Mustaffa¹, Rosline Hassan¹, Wan Haslindawani Wan Mahmood¹, Azlan Husin¹, Zefarina Zulkafli³¹School of Medical Sciences, ²School of Dental Sciences, ³School of Health Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan

Introduction: The prerequisite for autologous peripheral blood haemopoietic stem cell (APBSC) transplantation is the successful mobilization and collection of PBSC. The aim of this study is to determine the factors that affecting APBSC collection in multiple myeloma (MM) patient at our centre. *Materials & Methods:* Retrospective analysis of all 35 MM patients who underwent APBSC mobilization in our center for 10 years was performed. Patients were mobilized by daily stimulation with cyclophosphamide-G-CSF regime. The leukapheresis for PBSC collection was started when the peripheral blood (PB) CD34+ cell counts were >20cells/ul. The CD34+ dose of <2x10⁶ and <5x10⁶ cells/kg body weight after a single mobilization procedure was considered unsuccessful and suboptimal collection respectively. The analyzed factors include patient's characteristic, disease status, treatment and haematological parameters which were obtained from medical record. The logistic regression analysis (univariate and multivariate approaches) was used for statistical analysis and p value <0.05 was considered as significant. *Results:* Majority of patients were Malay (97.1%) with the mean age of 54.29 years and majority (80%) had successful APBSC collection. The only independent factor that significantly correlated to the successful APBSC collection was PB CD34+ cell count (p=0.046, OR=0.95, CI=0.90, 0.99). The other factors included the age, gender, race, weight, disease status, blood group, bone marrow plasma cell count, white blood cell count and number of chemotherapy were statistically not significant. *Discussion:* We found that PB CD34+ cell count was the only significant factor correlated to CD34+ cell yield of collected APBSC in MM patients and the result was consistent with previous study.

Poster 38. The conventional and the new: Comparison between Kinyoun-stained light microscopy and Auramine-stained light-emitting diode (LED) fluorescent microscopy methods, for AFB detection in culture positive sputum

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Introduction: Numerous studies have shown that Auramine stain LED fluorescent microscopy is superior to Ziehl-Neelson stain (hot method) light microscopy, for acid-fast bacilli (AFB) screening in sputa. However, comparison between the former method with Kinyoun-stained (cold method) light microscopy is limited. *Materials & Methods:* As one of very few laboratories that practises Kinyoun stain microscopy, we aimed to compare its performance against Auramine stain microscopy. We retrospectively studied relevant results from 50 M. tuberculosis complex (MTBC) culture-confirmed sputa of newly-diagnosed tuberculosis (TB) patients. *Results:* Twenty-seven (54%) sputa yielded fully concordance between the two methods; both were either smear negatives, or smear positives of similar grade (1+, 2+ or 3+). Fourteen (28%) results demonstrated partial concordance, whereby both methods reported smear positive but with grade discrepancy. There were nine (18%) discordant results, which meant that one method reported smear negatives but the other method reported smear positives of varying grades. Out of these nine results,

Kinyoun stain and Auramine stain methods reported four false negatives and five false negatives, respectively. *Discussion:* Majority of culture-positive sputa (82%) reported either fully or partially concordant AFB screening results between the two methods. The remaining one fifth of result demonstrated discordance, in which one method reported smear positive while the other, smear negative. Since we initially expected Auramine stain microscopy to outperform Kinyoun stain microscopy, we were surprised to discover that the conventional technique with sensitivity of 54%, was just as good, if not slightly better, compared to the new technique with sensitivity of 52%.

Poster 39. Multidrug resistance gram negative bacteremia in a new health care setting: UiTM experience

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Introduction: The increasing prevalence of bacteremia with multidrug resistance (MDR) organism of recent years is of great concern. These organisms are commonly associated with hospital acquired infection. As a relatively new health care setting, we have yet established our MDR organism rate. This study describes the prevalence of MDR gram negative bacteremia in UiTM Specialist Centre between 2014 to March 2016. *Materials & Methods:* Seventy four blood cultures were positive in microbiology laboratory UiTM Specialist Centre in year 2014 until March 2016. Genus and species identification was carried out by Vitek-GNI Card (bioMérieux). Antibiotic susceptibility testing, screening and confirmatory test for extended spectrum β - lactamase (ESBL) performed using the disk diffusion method according to the recommendations of the National Committee for Clinical Laboratory Standards. *Results:* Gram negative organisms accounted for 49 (66%) of total blood culture positive. Common gram negative organisms isolated are *Escherichia coli* 9(18.4%), *Klebsiella pneumoniae* 9(18.4%), *Stenotrophomonas maltophilia* 8(16.4%), *Enterobacter* species 5(10.2%), and *Pseudomonas aeruginosa* 3(6.1%). Two out of nine (22.2%) *Escherichia coli* were ESBL producer while 1 out of 9 (11.1%) *Klebsiella pneumoniae* was ESBL producer. There was one MDR *Acinetobacter baumannii* isolated. *Discussion:* The high rate of MDR gram negative bacteremia is worrying because of its associated significant mortality and morbidity. The admission of patients with known MDR organism from other centre might contribute to the occurrence of MDR organism in our centre. We need to take a closer look at our antibiotic stewardship and strict infection control measure to curb further spread of MDR organisms.

Poster 40. Anti-glomerular basement membrane (GBM) antibodies in Malaysia: a frequency study

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Introduction: Anti-glomerular basement membrane (GBM) disease is an autoimmune disease characterized by presence of anti-GBM antibodies against specific antigen in glomerular and/or pulmonary basement membrane. These antibodies induce activation of complement complex c resulting progressive glomerulonephritis and pulmonary haemorrhage. *Materials & Methods:* In this retrospective study, data of 245 Malaysian patient samples sent for anti-GBM antibodies test from January 2014 until December 2015 was collected. Measurement of antibodies against GBM was performed by using Elia™ System (Freiburg, Germany), a fluoroenzyme immunoassay which uses human recombinant α 3-chain of collagen type IV with NC1-domain as antigen. *Results:* These patients consisted of 97 females and 148 males aged 1 to 84. Of all 245 patients, 9 individuals who were diagnosed with acute kidney failure were found positive for anti-GBM. The mean age was 28.3 ± 11.3 years with male to female ratio of 1:1.25. Overall, the positivity rate of anti-GBM was 3.7% in this study. *Discussion:* The frequency of anti-GBM positive patients in Malaysia found in this study is relatively high compare to the other population such as Hong Kong and UK. Further study on the association of the disease and other factors such as genetic and environment might be beneficial in early detection of the disease.

Poster 41. A Rare Case of Basal Cell Carcinoma Arising From An Epidermal Naevus

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Introduction: Epidermal naevus is a congenital cutaneous hamartoma with a benign course. We are highlighting a rare case of epidermal naevus with malignant transformation to basal cell carcinoma. *Case Report:* A 79-year-old Chinese man had a skin biopsy at our centre for an enlarging skin nodule within a linear papular lesion measuring 2 x 4 cm at the left side of his neck. The lesion has been present since childhood, but gradually enlarging and became symptomatic for the past three years. It was pruritic with contact bleeding and became ulcerated with crust formation. Section from the skin biopsy shows proliferation of basaloid malignant cells arising from the epidermis with evidence of peripheral palisading and retraction artefact. These malignant cells are surrounded by parakeratosis, acanthosis and mild spongiosis of the epidermis. The diagnosis was finalized as basal cell

carcinoma arising from an epidermal naevus. *Discussion:* Malignant transformation of epidermal naevus is rare. Several cases of basal cell carcinoma within an epidermal naevus have been reported with favourable outcome after excision. A molecular study suggests that the basal cell carcinoma component may not be clonally related to its epidermal naevus component. This was evidenced by presence of PIK3CA mutation that is present in the basal cell carcinoma component. In conclusion, basal cell carcinoma arising from epidermal naevus is an uncommon occurrence. Clinicians and pathologists must be aware of the possibility of a malignant lesion in a patient presenting with changes within an epidermal naevus.

Poster 42. p63-positive prostatic adenocarcinoma: a potential diagnostic pitfall

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Introduction: Immunohistochemically, p63 is a common marker to highlight basal cells. Its expression in prostatic adenocarcinoma is rare and may cause diagnostic confusion. *Case Report:* A 64-year-old man with known case of prostatic carcinoma diagnosed by transrectal ultrasound (TRUS) biopsy underwent radical prostatectomy. Histology revealed two morphologically distinct tumours: one of usual prostatic adenocarcinoma and another tumour consisting of secretory cells with p63-positive hyperchromatic basaloid nuclei. Final diagnosis was reported as prostatic adenocarcinoma Gleason score 7 (3+4) with aberrant p63 expression. *Discussion:* Absence of basal cells is one of the histological hallmarks of diagnosing prostate adenocarcinoma. Both high molecular weight cytokeratin and p63 may be used to identify presence of basal cells in prostatic glands. Various reports have documented p63-positive prostatic adenocarcinomas, rendering p63 positivity a possible diagnostic pitfall in diagnosis of prostatic adenocarcinomas especially in core biopsies. These types of prostatic adenocarcinomas are associated with p63-positive secretory cells exhibiting hyperchromatic basaloid nuclei. A recent study has shown that p63-positive prostatic adenocarcinomas exhibit distinct molecular profile when compared to usual prostatic adenocarcinomas. p63-positive prostatic adenocarcinomas express mixed luminal/basal immunophenotype and mostly express GSTP1 (a marker of basal compartment in normal prostate glands), with negative ERG gene rearrangement. It is likely that p63 may have a role in prostate biology and further research is warranted for insight in prostatic cell-of-origin. In conclusion, p63-positive prostatic adenocarcinoma is a rare and poorly understood lesion. Pathologists must be aware of this entity to avoid a potential diagnostic pitfall.

Poster 43. Detection of Rhd 1277A gene in Rhesus negative blood donors in Perak: a preliminary study

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Background: The RHD 1277A mutation is found to be common amongst the Chinese population with the DEL variant. Although rare, it has the potential to develop significant alloimmunization due to pregnancy or mis-transfusion. The aim of this study was to screen for this mutation in rhesus negative donors to prevent the aforementioned side effects. *Materials and Methods:* Blood donors through mobile drives and collection centre in Hospital Raja Permaisuri Bainun were recruited from April till December 2015. 2.5ml of blood sample was collected and blood group and rhesus phenotype, genotype were determined. Molecular detection of RHD 1277A gene was performed using PCR- sequence specific primers technique. *Results:* A total of 175 rhesus negative samples were collected. The most common genotype among Indians and Malays were (cde/cde) genotype and (Cde/cde) (51%) in Chinese. Five (3%) were found to be weak D with genotype of CDe/cde (3) CDE/cDe (1), and CDe/CDe (1) respectively. *Discussion:* In conclusion, majority were found to be of the cde/cde phenotype with 3% weak D. RHD 1277A gene mutation detection and its frequency will be determined.

Poster 44. Anti-proliferative effect of Trigona honey on MCF-7

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Introduction: The ability to proliferate progressively is a crucial characteristic of cancer cells. A number of natural products including prophetic food were demonstrated to have an anti-proliferative effect on cancer cells. Trigona honey has received much attention for its anti-microbial and anti-oxidant properties. The anti-proliferative effect of this honey on cancer cells however, is yet to be discovered. *Objective:* The aim of this study is to investigate the anti-proliferative effect of Trigona honey on MCF-7 cells. *Materials & Methods:* MCF-7 cells were cultured in basal medium DMEM-F12, containing 10% fetal bovine serum, 1% antibiotic antimycotic and 1% glutamax. Upon 80% confluence in 96 well plate, used media were replaced with basal media enriched with different concentrations (v/v) of Trigona itama honey; 0, 0.049, 0.195, 0.78, 3.125, 12.5 and 25. Proliferation of MCF-7 cells after 24 and 72 hours were measured by WST assay. Higher absorbance reading denotes higher proliferation rate. *Results:* MCF-7 cells treated with Trigona honey-enriched media showed consistent reduction in cell proliferation after 24 and 72 hours. *Discussion & Conclusion:* These preliminary findings show a promising effect of Trigona honey as an anti-cancer agent through its anti-proliferative effect.

Poster 45. Confidence level in venepuncture and knowledge on the factors affecting blood sample haemolysis among clinical staff in Clinical Training Centre (CTC) UiTM Sungai Buloh

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Introduction: In vitro haemolysis of blood samples may lead to inaccurate results and repeat sampling causing additional pain, delaying treatment decisions, and increasing length of stay. Haemolysed specimen interferes with various clinical laboratory tests such as blood bank testing, coagulation testing and measurement of chemical chemistry tests. This study aimed to assess confidence level of clinical staff performing venipuncture and their knowledge on factors affecting blood sample haemolysis. **Materials & Methods:** A cross sectional study with stratified random sampling of 50 clinical staff conducting venepuncture from different units in CTC UiTM Sungai Buloh was conducted. Data was collected using self-administered questionnaire comprising general information of the participants, confidence level on performing first and last venepuncture, and knowledge on the factors affecting in vitro haemolysis. Data was analysed using SPSS version 20. **Results:** Almost 27% of the clinical staff participated in this study. There was an increase in confidence at last venepuncture among clinical staff of all categories. Most of clinical staff correctly identified the most likely factors causing in vitro haemolysis with regards to venepuncture technique and specimen handling. However many of them did not recognize which method for blood sampling contributes most to the occurrence of in vitro hemolysis. **Discussion:** These findings will help the laboratory managers to determine which part of phlebotomy process clinical staff should receive education or training, which will improve the quality of the service.

Poster 46. Knowledge on the complications related to blood transfusion among nurses in HUSM

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Introduction: Blood transfusion reaction may lead to a major morbidity. The nurses' skill and knowledge are crucial to assure early detection and prevention of transfusion reaction. This study was carried out to assess nurses' knowledge on the blood transfusion complication. **Materials & Methods:** A descriptive study was done involving a random sample of 200 nurses involved in blood transfusion in HUSM. A validated modified version of Routine Blood Transfusion Knowledge Questionnaire (RBTQ) was used. The questionnaires were completed by the nurses in the presence of the researcher. Each correct response was awarded one point. No point was awarded if two conflicting response were selected. **Results:** The overall mean score was 59.1%. Majority of the nurses were aware of usual presenting complaint of mild allergic reaction (92%) but very few nurses (n=3 1.5%) knew the first action in handling this case. Majority were aware of sign and symptoms and nursing management of acute haemolytic transfusion reaction (65% and 91.5% respectively) even though only 49.5% knew the nursing intervention to minimise the risk of acute transfusion reactions. Only 33.5% were aware that patient identification error is the commonest cause of fatal transfusion reaction. Approximately 57% were aware of the complication of rapid administration of cold blood. **Discussion:** Overall, the nurses had significant knowledge deficits of complication related to blood transfusion. Since good awareness of transfusion reaction by nurses enables rapid intervention and management, there is a need for a compulsory on-going educational program to improve their knowledge.

Poster 47. Frequency of anti- β_2 glycoprotein I antibodies among patients with suspected anti-phospholipid syndrome: a Malaysian standpointNurhanani MN¹, Ainur YY¹, Ching YM¹, Balqis K¹, Nur Syahirah A¹, Hasni Mahayidin², Masita A¹*¹Autoimmune Unit, Allergy and Immunology Research Centre, Institute for Medical Research, Jalan Pahang, Kuala Lumpur, Malaysia; ²Department of Pathology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor*

Introduction: Beta2-glycoprotein I (β_2 GPI) is a plasma protein, mainly synthesized in the liver, of which testing was included in the laboratory criteria for the diagnosis of Anti-phospholipid syndrome (APS), in an effort to improve the diagnostic utility of anti-phospholipid antibodies assays. Studies indicate that β_2 GPI is required as a cofactor for binding of anti-phospholipid antibodies. APS is a clinical syndrome characterized by arterial and/or venous thrombosis, recurrent spontaneous abortions and thrombocytopenia, associated with the presence of raised levels of anti-phospholipid antibodies. **Materials & Methods:** This is a retrospective study looking at the frequency of anti- β_2 GPI (IgM and IgG) antibodies measured by fluoroenzyme immunoassay (FEIA) among patients with suspected APS between 2013 until 2015. **Results:** A total of 310 patients' samples were included, of which 46 were males (14.8%) and 264 were females (85.2%). More than half of the total patients were Malays (59.7%), while the remaining were Chinese (18.7%), Indians (11.3%) and of other races (10.3%). Twenty out of all patients (6.45%) had recorded presence of both IgM and IgG antibodies, while 31 patients (10%) had only positive IgM antibodies and 44 patients (14.2%) had only IgG antibodies. **Discussion:** Examination of the isotypes and monitoring of the levels of anti- β_2 GPI, could be useful in determining the relationship of the autoantibodies with the clinical manifestations of APS.

Poster 48. Prevalence of tuberculosis isolates in Hospital Sungai Buloh in 2014Anis Roziana Mohamad¹, Rukman Awang Hamat², Tengku Zetty Maztura Tengku Jamaluddin³, Tuan Su Tuan Soh⁴^{1,2,3}Department of Microbiology and Parasitology, Faculty of Medicine and Health Sciences, University Putra Malaysia, Selangor, Malaysia; ⁴Hospital Sungai Buloh, Selangor, Malaysia

Introduction: WHO had identified tuberculosis as one of the six infectious diseases that possess a threat to the world's population in 2012. In Malaysia, in the year 2010, a total of 18,517 people have been infected with tuberculosis. The latest incidence of tuberculosis in Malaysia was reported in 2011 by WHO are 81.00 per 100,000 people. HIV infection is the strongest known risk factor for TB. High HIV prevalence rates are significantly correlated with high TB incidence rates. In terms of diagnosis, culture technique has been shown to be more sensitive method in diagnosing tuberculosis rather than sputum smear. **Materials & Methods:** Secondary datas of positive culture Mycobacterium tuberculosis complex from various specimens in 2014 were collected from eHIS Hospital Sungai Buloh. Patients' HIV status was analyzed and antituberculosis susceptibility pattern was reviewed. All the datas were analyzed using SPSS version 22. **Results:** There were a total of 190 positive culture of Mycobacterium tuberculosis. The samples include sputum (126 samples), blood (20 samples), pleural fluid (10 samples), tracheal aspirate (10 samples) and others were (24 samples). 186 isolates were successfully proceeded with antituberculosis susceptibility testing while 4 samples were not proceed with antituberculosis susceptibility testing due to contamination. Out of 190 isolates, 70 (36.8%) were isolated from HIV positive patients while the other 120 (63.2%) were isolated from non HIV patients. The antituberculosis pattern showed majority of the isolates (172 isolates) were multisensitive, 7 isolates were mono-resistant, 4 isolates were poly-resistant and 3 isolates were multidrug resistant. 2 out of 3 cases of MDR are HIV positive patients. The smear negative tuberculosis was 35.3% while smear positive tuberculosis was 64.7%. **Discussion:** The current increasing cases of HIV associated tuberculosis have been shown to divert the clinical pattern of tuberculosis towards smears negative pulmonary tuberculosis and extra pulmonary tuberculosis. Culture is mandatory in diagnosing tuberculosis infection rather than smear alone.

Poster 49. Correlation Vitamin D Receptor expression with Degree of Gleason score Prostatic Adenocarcinoma

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Background: Prostatic adenocarcinoma is the leading cause of new cancer in men and is second only to lung cancer as a leading cancer related death in men. Vitamin D receptor (VDR) is a nuclear hormone receptor that acts as a transcriptional regulator in response to circulating 1,25 dihydroxyvitamin D, the active hormonal form of vitamin D. Low levels of plasma vitamin D have been implicated as a possible risk factor for both prostate cancer incidence and advanced disease. **Objective:** The aim of this study is to examine the association between VDR polymorphisms and cancer stage (localized versus advanced) as well as cancer grade (Gleason score >6 versus 6) in Hasan Sadikin Hospital, Bandung. **Methods:** This study was performed as descriptive-retrospective 18 patients diagnosed Prostatic Adenocarcinoma with the age range between 50-80 years old in Department of Anatomical Pathology, Hasan Sadikin Hospital Bandung from January 2013 to August 2015 consist of 9 patients gleason score 6 (50%), and 9 patients gleason score >6 (50%). Immunohistochemical expression of VDR were evaluated. **Results and Discussion:** When all 18 cases evaluated with VDR, 9 cases of gleason score 6 showed significantly higher staining than 9 cases of gleason score > 6 with specific nuclear stain. The tumour showed focally than diffuse distribution. **Conclusion:** Higher staining VDR expression in group gleason score 6 may predict the prognosis of the patients and also can support utilization Vitamin D to prevent the progression of the diseases.

Poster 50. Prevalence of Positive Dengue Serology among the Blood Donors in Hospital University Sains Malaysia (HUSM): A Preliminary Study

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Introduction: Many emerging and reemerging diseases have been reported to be a threat to blood safety worldwide. In recent years, dengue outbreak has become a serious problem to our country. The aim of our study is to determine the prevalence of positive dengue serology among the asymptomatic blood donors. **Materials & Methods:** A cross-sectional study is conducted starting from March 2015 till August 2015 in Hospital Universiti Sains Malaysia (HUSM), Kubang Kerian. Hundred and twenty-six (126) samples were collected from the blood donors who donated blood at blood bank and mobile blood donation programs. The samples are tested for dengue NS1 antigen, IgM, and IgG antibodies using immunochromatography method (rapid test). **Results:** Total of 126 samples were tested for dengue NS1 antigen, IgM, and IgG. Out of 128 samples, 1 sample (0.8%) was positive for dengue IgG, but negative for dengue IgM and NS1 antigen. The other samples (99.2%) were negative for all IgM, IgG, and NS1. **Discussion:** This study showed that dengue serology can be positive in asymptomatic donor. However, large scale study and supported by confirmatory test should be conducted to determine the risk of transfusion-related dengue infection in our population.

Poster 51. Characterization of human embryonic stem cell-derived cardiomyocytes upon long term cultureKhoo Tze Sean¹, Rahman Jamal¹, Hafiza Alauddin², Noor Hamidah Hussin²*UKM Medical Molecular Biology Institute (UMBI)¹, Hematology Unit, Department of Pathology, UKM Medical Center²*

Cardiovascular disease is the leading cause of mortality and it accounts for 30% of total annual deaths worldwide. Current treatments serve to control but not to reverse the disease. Cell therapy has emerged as a potential mode of treatment to repair and replace the damaged heart, but the availability of compatible cells is limited. The emergence of pluripotent stem cell technology offers hope to these patients as it can potentially supply unlimited number of compatible cells for therapy. Many have tried to direct differentiation of pluripotent stem cells into cardiomyocytes using various protocols with cocktails which consist of different combinations of cytokines and growth factors. But the resulting beating cardiomyocytes are primitive in their characteristics, resembling foetal cardiomyocytes rather than adult cardiomyocytes. These immature foetal-like cardiomyocytes may have contributed to the poor engraftment of cardiomyocytes upon transplantation shown in previous study. Our study was aimed to investigate changes in the cellular morphology of cardiomyocytes upon long term culture. The human embryonic stem cells (hESC)-derived cardiomyocytes were found to maintain their beating activity, expressed cardiac markers (cTNT and cardiac α -MHC), but displayed various morphologies upon continuous culturing for one year. Majority of the cardiomyocytes exhibit immature phenotype. Only a small percentage of cardiomyocytes displayed mature, elongated phenotype with clear and well-organized sarcomeric structure. This suggests that time is only one of the factors which contributes to cardiomyocyte maturation. More studies are needed to determine factors needed to direct maturation of foetal-like cardiomyocytes to adult cardiomyocytes which may be more clinically relevant/useful.

Poster 52. A case of discordant TFT result due to Heterophile antibodies interference with Thyrotropin assayMohd Jamsani MS¹, Siti Sharina A², Syafiq AS², Zuhairawati P², W. Nur Ashikin MF²*¹Chemical Pathology Unit, Department of Pathology Hospital Pulau Pinang; ²Endocrine Unit, Department of Pathology Hospital Putrajaya*

Introduction: Immunoassay interferences may lead to misinterpretation of results, unnecessary studies and wrong course of therapy. We report a patient with a known case of Graves' disease with a discordant TFT result due to heterophile antibody interference. *Case report:* A 29 year old female, Para 2, diagnosed as Graves' disease since July 2013. She was treated with carbimazole and had 2 episodes of remission during the course of treatment. Currently she is having a relapse hyperthyroid and on carbimazole 25 mg OD. Biochemically her TFT showed persistent hyperthyroid features of suppressed TSH : <0.03 mIU/L. In February 2016, we noted that her TFT was discordant, TSH: 3.19 mIU/L and Free T4: 66 pmol/L. Her subsequent TFT in April 2016 showed a significant discordant of TFT result, TSH: 47.97 mIU/L and Free T4: 66 pmol/L. In view of the discordant results, further laboratory investigations were performed to rule out the possibility of immunoassay interferences. A serial dilution of her sample showed non-linear TSH results. The patient's sample was reanalyzed on different immunoassay platforms and the results revealed a suppressed TSH and concordant TFT. Her rheumatoid factors were negative. Finally incubation of the patient's serum with heterophile blocking tube, returned 7.4% recovery, and was considered a positive study. These findings highly suggested the presence of heterophile antibody interference. *Discussion and conclusion:* This case illustrates the need to increase awareness of possible interference of heterophile antibodies. Laboratories should put procedures in place to detect, test and report suspected interferences. Pathologist and scientist should play an active role in identifying any significant discordant of TFT during routine result validation and to communicate with the managing physician.

Poster 53. Inhibition of human umbilical vein endothelial cells proliferation and angiogenic growth factors down-regulation in tumoural angiogenesis model co-cultured with Wharton's jelly-derived mesenchymal stem cellsNur Fatin Aqilah Raman¹, Nur Syahrina Rahim¹, Nur Fariha Mohd Manzor¹, Chua Kien Hui², Nur Azurah Abdul Ghani³ and Abd Rahman Hayati¹*¹Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia; ²Department of Physiology and ³Department of Obstetrics and Gynaecology, Faculty of Medicine, Universiti Kebangsaan Malaysia, Malaysia*

Introduction: Stem cells and cancer cells are known to excrete pro – angiogenic factors such as vascular endothelial growth factor (VEGF). These factors promote angiogenesis of normal as well as cancerous tissues. *Objective:* The aim of this study is to compare the expressions of growth factors and Human umbilical vein endothelial cells (HUVECs) count in tumoural and non-tumoural angiogenesis model co-cultured with Wharton's jelly-derived mesenchymal stem cells (WJMSC). *Materials & Methods:* Different angiogenesis models were prepared as follows; 1) Non-tumoural angiogenesis model, NTAM (indirect co-culture of WJMSCs and HUVECs), 2) Tumoural angiogenesis model, TAM (indirect co-culture of MCF7 and HUVECs) and 3) Stem cells in tumoural angiogenesis model, STAM (indirect co-culture of WJMSCs, MCF7 and HUVECs). Culture of HUVECs alone was prepared as control. The difference in HUVECs count and VEGF concentration were compared between models on day 3 and 6. *Results:* HUVECs count and VEGF were reduced in STAM compared to TAM with p-value of 0.014 and 0.021, respectively. In contrast, HUVECs count in NTAM was significantly increased compared to control with p-value

of 0.018. *Conclusion:* WJMSCs promote HUVECs proliferation and the up-regulation of pro-angiogenic factors in NTAM. While in STAM, the presence of stem cells with MCF7 seems to inhibit HUVECs proliferation and eventually down regulate the pro-angiogenic factors. Hence, it is suggested that the involvement of WJMSCs in STAM offers an anti-tumour property.

Poster 54. Massive chronic intervillitis of the placenta: A rare placental lesion with high risk of recurrences

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Introduction: Massive chronic intervillitis (MCV) or currently known as chronic intervillitis of unknown aetiology is a rare poorly understood placental lesion. MCV is strongly associated with recurrent spontaneous miscarriages, IUGR and fetal demise. We described a case of MCV in a lady with consecutive recurrent miscarriages. *Case report:* The patient was a 37-year-old lady who had ten consecutive recurrent first trimester miscarriages within the last 13 years. She has no living child and the relevant blood investigations were not helpful in determining the cause of recurrent miscarriages. Histopathological examination of the conception tissues showed abundant aggregates of CD 68 positive histiocytes primarily within the intervillous spaces associated with increased perivillous fibrin deposition. No significant villitis were seen. The findings were consistent with massive chronic intervillitis. *Discussion & conclusion:* MCV is associated with high recurrence rate of spontaneous miscarriages. In general, practicing pathologist are unfamiliar with MCV. The histiocytes may be missed during a routine reporting of tissue from products of conception if important clinical informations are not being highlighted to the pathologists. Chronic intervillitis of infectious etiology should be excluded. However the etiology of MCV remains unclear. The histiocytes are maternal in origin which led to the hypothesis of a possible abnormal maternal immune reaction towards the placental tissue in the pathogenesis of MCV. Obstetricians and pathologists should be made aware of this entity. Until today, no proven effective treatment has been proposed to prevent recurrences. Further studies are required in the understanding of this entity and in the prevention of recurrent pregnancy losses.

Poster 55. A case of Triploidy

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Introduction: Triploidy is one of the commonest chromosomal aberrations in first trimester spontaneous miscarriages. We describe a case of Triploidy Syndrome diagnosed in the second trimester. *Case report:* A 32-year-old lady in her second pregnancy at 15 weeks gestation was noted to have oligohydramnios and a fetus that was small for gestational age. Detailed ultrasound showed a male fetus with several abnormalities which include micrognathia, frontal bossing, bilateral mild ventriculomegaly, clawed hands, bilateral talipes, constricted chest, small stomach and a small bladder. At 19 weeks an intrauterine death was confirmed. At autopsy the fetus was macerated and the parameters corresponded to a 16-week-old gestation. Additional features noted were hypertelorism, microphthalmia, malformed low set ears, small mouth, short nasion and micropenis. The limbs abnormalities include bilateral syndactyly of third and fourth fingers, syndactyly of third and fourth digits of right foot, rocker bottom feet and bilateral talipes equinovarus. There was hypoplasia of the right lower limb with thinning at the middle anterior part of the thigh. On internal examination there were hypoplastic alobar lungs, stenosed ductus arteriosus, pulmonary trunk hypoplasia and adrenal hypoplasia. The placenta showed no evidence of hydatidiform mole. Fetal DNA analysis following amniocentesis revealed a Triploidy Syndrome containing XXY chromosome. *Discussion & conclusion:* Triploidy can be classified into diandric or digynic types. The former reflects extra haploid set of chromosomes of paternal origin and associated with partial hydatidiform mole. The digynic type represents extra haploid set of maternal origin and is more likely to live into second trimester which was demonstrated in our case.

Poster 56. Effect of Phoenix Dactylifera (date palm) consumption on energy metabolism: A Systematic Review

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Introduction: Based on the Quran and prophetic Sunna, Phoenix Dactylifera (date palm) are mentioned as the super food for preservation of health. Phoenix Dactylifera is a high-energy fruit that contain high level of natural sugars like glucose, fructose and sucrose. The systematic review is to study the potential of Phoenix Dactylifera as an energy source and its mechanism in human body from published reports. *Materials & Methods:* The search was conducted for relevant articles published in four electronic indexed databases namely Ebscohost, Biomed Central, Science Direct and Pubmed published from January 1997 to 2015. Bibliographies of screened studies and relevant reviews and manuscripts were also searched using Google scholar. Data reporting involved a descriptive summary and systematic reviews recorded according to PRISMA guidelines. *Results:* There

were only three articles discussing on the effects of dates on energy metabolism. All the reports were focused on animal study. There are no report on the effect of date palm consumption and its components on energy metabolism pathways in animal or human subjects. It was reported that the date palm pulp is a potential sources for animal feed because of the nutritive values. It was also shown that date palm have similar energy content compared to usual animal feed (corn grain). *Conclusion:* This systematic review identified limited reports on the effect of date palm consumption on energy metabolism. There are several gaps in the evidence. Further studies are required to provide a comprehensive understanding on this matter.

Poster 57. Cytogenetics abnormalities in Philadelphia-negative myeloproliferative neoplasm

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Introduction: The detection of chromosomal abnormalities in myeloproliferative neoplasm (MPN) is important since the clonal nature of the disease may affect the treatment selection and disease monitoring. In this study, we describe the chromosome abnormalities in patients with Philadelphia-negative MPN using cytogenetic analysis. *Materials & Methods:* The bone marrow samples were cultured overnight and harvested. The cell suspensions obtained were subsequently undergone slide preparation and stained using Trypsin-Giemsa method. Where possible, a total of 20 metaphase spreads were karyotyped. *Results:* We received 187 bone marrow samples from patients with diagnosis of MPN from January 2013 to December 2015. The median age of the patient is 55 years old. There are 105 (56%) males and 82 (44%) females. Majority of the patients are Malay (n=107, 57%), followed by Chinese (n=49, 26%), Indian (n=22, 12%) and others (n=9, 5%). The cytogenetic analysis showed no chromosomal abnormalities in 176 patients (94%). Only 11 (6%) patients demonstrated chromosome abnormalities. They are trisomy 8 (n=2), hyperdiploidy (n=2), inversion 9, deletion 11 (pter>q14), t(1;12)(q25;q24.3), t(1;6)(q21;p23) and t(7;7)(p15;q36). The specific abnormalities were unidentifiable in two cases; the first case showed structural abnormalities of chromosome 6 and 9 and the second case showed multiple abnormalities of chromosome 3, 4, 5 and 9 with the presence of another two marker chromosomes. *Discussion:* The incidence of chromosome abnormality in our patients is lower as compared to the previous studies. The more sensitive technique such as molecular analysis would be needed to detect the presence of chromosomal rearrangement in patients with MPN.

Poster 58. Benign presentation of an ovarian small cell carcinoma of hypercalcaemic type: A case report

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Introduction: Ovarian small cell carcinoma of hypercalcaemic type (OSCCHT) is a rare tumour arises in young women with aggressive behaviour and a poor prognosis. The common presenting symptoms are abdominal distension and/or abdominal discomfort. About two thirds of patients have hypercalcemia. *Case Presentation:* A 25 year old nulliparous Malay lady with underlying obesity (BMI 32.1) presented with a short history of abdominal pain and fever. Examination revealed vaguely distended abdomen. Ultrasound of the pelvis region showed bilateral ovarian cyst, most likely endometriotic cysts. She underwent exploratory laparotomy, right salphingo-oophorectomy and infracolic omental biopsy. Histopathological examination showed sheets of malignant round small cell tumour with follicle-like spaces. The tumour cells show pronounced nuclear atypia, mitotic activity and apoptosis. Immunohistochemical analysis pattern is characteristic of OSCCHT. *Discussion:* Young patients with this tumour have a more aggressive clinical course and grave prognosis. Morphologically it can be challenging as it can be mistakenly diagnosed as juvenile granulosa cell tumour, sex-cord stromal tumour and germ cell tumour. As histopathological examination remains the gold standard to its diagnosis, it is therefore mandatory to get a timely and correct diagnosis as such patients require aggressive multiagent therapeutic approach to improve prognosis.

Poster 59. Targeted next generation sequencing for mutational profiling in Acute Myeloid Leukaemia

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Introduction: Acute Myeloid Leukaemia (AML) is a disease with marked heterogeneity which results from a complex network of cytogenetic aberrations and molecular mutations. Current risk stratification is largely based on cytogenetics combined with common mutations in AML, which play a pivotal role in determining appropriate treatment options. The aim of this study is to determine the mutational landscape of AML using targeted next generation sequencing. *Materials and methods:* A total of 16 bone marrow and peripheral blood samples of AML patients were collected. DNA was extracted using QIAamp DNA MiniPrep Kit. We performed targeted sequencing using a panel of 20 frequently mutated genes in AML (Agilent ClearSeq AML). Captured DNA was then sequenced on Illumina MiSeq platform. Data analysis and bioinformatics were performed using Agilent's Surecall software. *Results:* We identified 14 recurrent mutated genes in AML. All 16 patients harboured NRAS,

SRSF2, SETBP1 and ASXL1 mutations. Other mutations include TET2 (n=15), RUNX1 (n=12), FLT3 (n=7), NPM1 (n=6), U2AF1 (n=4), DNMT3A (n= 3), IDH1 (n=2), CSF3R (n=2), CEBPA (n=2) and TP53 (n=1). Most of these patients have combinations of 4 and up to 9 gene mutations. Each patient also carries a private combination of unique exomic variants. *Discussion:* Targeted sequencing focuses on a region of interest and restrict analyses on potentially clinically relevant genes. It has greatly improved our possibility to detect genetic alterations which will provide a better risk stratification and personalised treatment. Therefore, it is a practical approach to identify mutational patterns that can further improve diagnostics and prognostication.

Poster 60. Prevalence of Group B Streptococcus in High Vaginal Swab Specimen at Universiti Kebangsaan Malaysia Medical Centre

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Introduction: Group B Streptococcus (GBS) or Streptococcus agalactiae is a gram positive coccus characterized by the presence of Group B Lancefield antigen in the cell wall. It is part of normal flora of the gut and frequently colonizes the vagina of 20-40% women. Group B Streptococcus is an important cause of infection in neonates, pregnant woman and non-pregnant adults predominantly in those with chronic underlying medical conditions. The aim of the study was to determine the prevalence of Group B Streptococcus in high vaginal swab specimen in Universiti Kebangsaan Malaysia Medical Centre (UKMMC). *Materials & Methods:* The study design was a retrospective study involving collection of high vaginal swab (HVS) culture data from January 2014 until April 2014 at UKMMC. *Results:* The prevalence of HVS samples positive with GBS in January, February, March and April were 10.4%, 13.1%, 16.7% and 13.6% respectively. A total of 210 out 1564 HVS samples were positive for GBS giving a prevalence of 13.43%. All isolates were sensitive to ampicillin and ceftriaxone. The susceptibility towards penicillin, erythromycin and clindamycin were 99%, 90% and 88% respectively. Only two isolates were resistant to penicillin. *Discussion:* The overall prevalence of GBS positive HVS among women at UKMMC were 13.43%. All (100%) GBS isolates were sensitive to ampicillin and 99% were sensitive to penicillin. Therefore, ampicillin and penicillin should be the preferred choice for treatment of GBS infection. However, continuous antimicrobial surveillance is required to monitor trends of resistance.

Poster 61. Analytical performance validation of the Roche Cobas c501 analyser

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Introduction: The Cobas c501 analyser (Roche Diagnostics, Mannheim, Germany) is a fully automated clinical chemistry analyser tailored for medium workload laboratories. We validated the analytical performance of the Cobas c501 analyser for routine biochemistry use in our satellite laboratory. *Materials & Methods:* The within-run and between-run imprecisions, bias, correlation with a current comparative method (Cobas Integra 400 Plus, Roche Diagnostics, Mannheim, Germany), and the manufacturer's reference intervals were validated for 19 routine biochemistry analytes according to the Westgard method validation protocols. Acceptability of the analytical performance was judged against the analytical performance specifications based on biological variation (BV) and/or the Guidelines of the German Federal Medical Council (RiliBAK). *Results:* Within-run and between-run coefficients of variation ranged from 0.37 - 3.30% and 0.54 - 2.59%, respectively. All analytes met the imprecision specifications based on BV except for sodium. The correlation coefficient, r for comparison with Integra 400 Plus were > 0.99 for all analytes except for chloride (r = 0.966). Seven analytes exceeded the bias specifications based on BV (albumin, creatinine, phosphate, total protein, sodium, potassium and chloride). The total errors for all analytes were within the acceptable limits specified by RiliBAK and the manufacturer's reference intervals were verified for all tested analytes. *Discussion:* The Roche Cobas c501 analyser demonstrates low imprecision, excellent correlation with a comparative analyser, acceptable total error levels, and is suitable for routine biochemistry analysis in the laboratory.

Poster 62. Evaluation of a line-immunoassay for detection of auto antibodies in connective tissue diseases

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Introduction: Autoantibodies constitute the basis for diagnosis and treatment of connective tissue diseases (CTD). The evaluation was conducted to determine the appropriateness of line immunoassay (LIA) as one of the diagnostic tests for CTD. *Materials*

& Methods: Thirty one blood specimens were collected from patients who were having systemic lupus erythematosus (SLE) [23], systemic sclerosis [4], mixed connective tissue diseases [3], polymyositis [1], dermatomyositis [1] and antiphospholipid syndrome [1] by Rheumatology Unit, from February to April 2016. The LIA was performed in Microbiology laboratory, Faculty of Medicine, UiTM. Seventeen different antigens spotted in lines on a nitrocellulose membrane, and autoantibodies in 10 µl of plasma were detected using a specific HRP conjugated antibody and substrate. Sample positive for autoantibodies were visualized by presence of distinct lines. The LIA results were compared to known autoantibodies profile as determined by ELISA. **Results:** Of the specimens that were tested positive by either of the two methods, it was found that 19 specimens [61.29%] were positive by both LIA and ELISA. Ten specimens [32.25%] were negative by both methods. Fifteen specimens [48.38%] were positive only by LIA, while 9 specimens [29.03%] were positive only by ELISA. The concordance rate was revealed at 93.50%. There was a trend toward higher specificity for anti-SmD1 with the LIA in patients with SLE. **Discussion:** The LIA is a rapid qualitative test that is easy to use, capable to detect more than one autoantibodies simultaneously, and comparable with ELISA. The appropriateness of LIA to be used as a diagnostic test was confirmed.

Poster 63. Evaluation of SP10 Sysmex Automated slide maker in Hospital Tengku Ampuan Afzan, Kuantan, Pahang

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Introduction: Despite the advancement of computerized automated haematology analyser, conventional direct microscopic examination of blood cells remains crucial in diagnostic haematology. Additionally, in keeping with increasing workload for such examination, automated slides maker is becoming norm and necessary. However for such equipment to be cleared for use in the diagnostic laboratory it must pass through evaluation process. The aim of this study is to evaluate the reliability of the newly installed automated slide maker Sysmex™SP10 at the Department of Pathology, Hospital Tengku Ampuan Afzan, Kuantan Pahang. **Methods:** A standardized grading of blood film based on the available quality control procedure was utilized for the assessment of the quality of slides prepared by the slide maker. Assessment was done by haematopathologists with score of 15-21 and score of 7-14 score is considered passed and rejected respectively. Evaluation was conducted for a period of 2 months that was divided into 4 phases of 2 weeks period of device operation by skilled operator, untrained staff, semi-trained staff and trained laboratory staff respectively. **Results:** In total 239 slides were assessed. The score of the prepared slides were good during the first and final phase of study with zero slides rejection. However, during the 2nd and 3rd phase where the instrument is being optimized and the staffs were receiving training, the pass rate was only 68.4% and 86.4% respectively. **Conclusion:** Sysmex™SP10 is a reliable slide maker. However, optimization of the device and appropriate training are necessary before it can be used for laboratory routine.

Poster 64. Analytical performance validation of the Bio-Rad D10 analyser

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Introduction: HbA_{1c} is a standard tool used for glucose monitoring in diabetic patients and various methods are available to measure this analyte. We recently validated the analytical performance of the Bio-Rad D-10 analyser (Bio-Rad, USA), which used ion-exchange high performance liquid chromatography (HPLC) method for HbA_{1c} measurement in our laboratory. **Methods:** HbA_{1c} in fifty samples were analysed using Bio-Rad D10 and Cobas Integra 400 plus (Roche Diagnostics, Mannheim, Germany). The within-run and between-run imprecisions, and correlation with a current comparative method (Cobas Integra 400 plus) were determined using method validation protocols from Westgard. Acceptability of the analytical performance was judged against the analytical performance specifications based on biological variation (BV) and/or the guidelines from the Australian regulatory bodies. **Results:** Within and between run imprecisions showed coefficients of variation (CV) less than the analytical goal for imprecision (< 2%) set by the Australian regulatory bodies (within run CV: 0.85% and 0.5%; and between run: 0.96% and 1.06%, respectively). Method comparison study showed good concordance between Bio-Rad D-10 and Cobas Integra 400. The correlation coefficient, r was greater than 0.99. The HbA_{1c} analysed in this study ranged from 5.0% to 11.0%. The mean of HbA_{1c} measured by Bio-Rad D-10 was higher than those measured by Cobas Integra 400 (7.6% vs. 7.3%, respectively). Calculated total error was less than the allowable total error specified by RCPA (±0.5 up to 10.0%, 5% > 10.0%). **Discussion:** Bio-Rad D10 analyser is a precise method which shows good correlation with a comparative method, acceptable total error levels, and is suitable to measure HbA_{1c} in a routine laboratory.

Poster 65. Over expression MiR-100 and MiR-125 and their role in the pathogenesis of Acute Promyelocytic Leukemia

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Introduction: Acute promyelocytic leukemia (APL) is a subtype of acute myeloid leukemia (FAB-M3). It accounts for 10%–15% AML in adults. Recently, a new epigenetic factor, microRNA (miRNA) has been reported to play a role in APL leukemogenesis. In this study, we performed differential miRNA expression profiling in APL patients using Nanostring nCounter® Max Analysis system. **Methods:** Total RNA was extracted from subject samples using miRNeasy Mini Kit (Qiagen, Hilden, Germany) according to the manufacturer's instructions. Differential miRNA expression profiling was performed using nCounter Human v2 miRNA Expression Assay kit (NanoString, Seattle, WA). Data was analyzed using nSolver™ Analysis Software 2.6. In addition, bioinformatics analysis was performed to correlate with the gene expression and signalling pathways. **Results:** 800 miRNAs were analysed from 8 patients diagnosed as APL. 18.8% were upregulated and others were downregulated. Two of the most upregulated miRNAs were miR-100 and miR-125b. In addition two highly expressed genes were RBSP3 and BAK1. MiR-100 was documented to repress the expression of RBSP3 gene through pRB-E2F1 pathway. Its action of progression was through G1/S transition and promoted S-phase entry. Thus, it induced cell proliferation and blocked promyelocytic differentiation. MiR-125b promote leukemic cell proliferation and inhibit Bak1 expression. **Conclusions:** The upregulated miR-100 and miR-125 in APL patients play important role in the pathogenesis of APL. By manipulating the targeted miRNA expression it provide a potential therapeutic strategy and warrants further validation in a larger prospective study.

Poster 66. Epidemiology of malignant ovarian germ cell tumors in hasan sadikin general hospital, 2010-2015

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Introduction: Ovarian malignancy is the seventh malignancy in women. Malignant ovarian germ cell tumor (MOGCT) is the second highest ovarian malignancy after ovarian epithelial malignancy. Epidemiology of MOGCT in West Java, especially in Hasan Sadikin general Hospital has not studied before. The primary objective of this study was to define the hospital-based epidemiology of MOGCT in Hasan Sadikin General Hospital. **Materials & Methods:** This study was performed as descriptive-retrospective using secondary data of patients diagnosed as MOGCT in Anatomical Pathology Department, Hasan Sadikin General Hospital Bandung from January 2010 until December 2015. This study shows the distribution ages of MOGCT, incidences rates, histopathological types of MOGCT and metastasis of this tumor. **Results:** We found 37 cases of MOGCT with 12 cases of Dysgerminoma (32,43%), 6 cases of Mixed Germ Cell Tumor (16,22%), 9 cases of Yolk sac (24,32%), 2 cases of Embryonal carcinoma (5,41%), and 8 cases of Malignant Immature Teratoma (21,62%). **Discussion:** There are 37 cases of MOGCT with the most cases is Dysgerminoma and the fewest cases Embryonal carcinoma.

Poster 67. Schistosomiasis of bladder: a case report

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Introduction: Schistosomiasis, also known as bilharzia, or “snail fever”, is acute and chronic disease caused by parasitic flatworms called schistosomes. There are two major forms of schistosomiasis – intestinal and urogenital – caused by five main species of blood fluke. Schistosomiasis is prevalent in tropical and subtropical areas, mainly in Africa. Indonesia is endemic for intestinal schistosomiasis in two isolated areas, Lindu valley and Napu valley, both located in the Province of Central Sulawesi. **Case description:** We report a case of schistosomiasis in the bladder, a 47 years-old female, with symptoms haematuria. In general physical examination, palpable masses filled up three-quarters of the bladder. On radiologic examination, showed calcification of the bladder wall image of the pelvis, due to urinary schistosomiasis. The transurethral resection from the lesion, the sample stained with hematoxylin-eosin showed characteristic eggs in association with prominent chronic inflammation. **Discussion and conclusion:** The diagnosis of infection is confirmed by the identification of eggs in stools or urine. Tissue biopsy of the bladder may demonstrate eggs when stool or urine examinations are negative. There is report of schistosomiasis of the bladder diagnosed by transurethral resection from the bladder.

Poster 68. Squamous cell carcinoma arising in skene's duct cyst: a case reportYuke Ireka¹, Hasrayati Agustina², Bethy S. Hernowo³*¹Department of Pathology, Resident of Faculty of Medicine, Padjadjaran University Bandung, Indonesia; ²Department of Pathology, Pathologist of Hasan Sadikin Hospital, Padjadjaran University Bandung, Indonesia; ³Head of Department of Anatomical Pathology of Hasan Sadikin Hospital, Bandung, Indonesia*

Background: Skene's duct cyst or paraurethral is an uncommon and may be congenital or acquired. A Skene's duct cyst presents as a cystic mass at the anterior wall of vagina, around the distal urethral. Paraurethral cyst affects 1% to 6% of the female population between 20-60 years of age. Malignant involvement of Skene's cyst is very rare. We reported a case of squamous cell carcinoma arising in Skene's duct cyst. *Case Description:* A 48-year-old woman presented to our hospital with a red eritematous tumour in the external genitalia and coital pain (dyspareunia). A biopsy extirpation was performed. Grossly, the tumour was a reddish tan ovoid mass, measuring 3x2,5x1,5 cm, covered by pale, tan mucosa and showing gray white and necrotic cut surface. Microscopically, the external surface was covered by stratified squamous epithelium and the cyst was lined by columnar epithelium that another part change to be a tumor mass with ovoid, round until spindle cells that proliferative and hyperplastic. The nuclei were polymorphies, hyperchromatic and mitotics were identified. It revealed Squamous cell carcinoma arising in skene's duct cyst. *Discussion and Conclusion:* Squamous cell carcinoma arising in skene's duct cyst is a rare case. We believe that this may be the first reported case. Many tumor may arise in Skene's duct. To find out the etiology or pathogenesis of this disease, however, further studies on this disease might be needed.

Poster 69. Human papillomavirus genotyping in uterine cervical adenocarcinoma via two commercial assays

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Introduction: Understanding the human papillomavirus (HPV) type-specific prevalence is critical in the design of vaccines for HPV-related cancers. Cervical adenocarcinoma is on the increase worldwide and requires particular attention, with regards to its HPV type-specific association. This study utilised two commercial methods viz Method 1 based on a multiplex real-time PCR system (Anyplex HPV28 Detection: Seegene, Korea) and Method 2 which employs DNA amplification with flow-through hybridisation (21 HPV Genoarray Diagnostic Kit: HybriBio, Hong Kong) for the HPV genotyping of 53 formalin-fixed, paraffin-embedded cervical adenocarcinomas, diagnosed at the Department of Pathology, University of Malaya Medical Centre. *Materials & Methods:* Upon successful amplification of a 268 bp human beta-globin segment, DNA from the respective cases, were genotyped by the 2 methods. *Results:* Overall HPV detection by Method 1 (62.3%) and Method 2 (52.8%) showed good agreement (83.0%, $\kappa=0.656$, $p=0.180$). 5 high-risk (HPV16, 18, 45, 59, 68) and 1 low-risk type (HPV43) were identified in the cases. HPV18 was the most commonly encountered (22/53 by Method 1; 18/53 by Method 2). Interassay agreement for individual high-risk genotypes ranged from good to perfect (all $p>0.05$): HPV18 ($\kappa=0.681$), HPV45 ($\kappa=0.791$), HPV16 ($\kappa=0.836$), HPV59 ($\kappa=1.000$) and HPV68 ($\kappa=1.000$). HPV43 was detected only via Method 1 and not Method 2. *Discussion:* The overall and type-specific HPV prevalence rates in cervical adenocarcinoma as determined by both methods in this study are comparable and also similar to that generally reported, implying that both commercial methods may be used in routine HPV genotyping of cervical adenocarcinomas and probably other HPV-linked cancers.

Poster 70. Cyclooxygenase 2 expression in cervical adenocarcinoma exceeds that in squamous cell carcinoma

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Introduction: Over the years, adenocarcinoma (ADC), which has a worse prognosis than squamous cell carcinoma (SCC) of the cervix has shown an increasing trend. Cyclooxygenase 2 (COX2) expression which has been associated with tumour progression in several solid cancers was studied for its association with SCC and ADC of the cervix. *Materials and Methods:* 35 histologically re-confirmed SCC and 35 ADC were immunohistochemically stained for COX2 using a mouse monoclonal antibody (1:100; Dako: Clone CX-294) on a Ventana Benchmark XT. The COX2 histoscore was computed as intensity of staining, semi-quantitated on a scale of 0-3 as 0 (negative), 1 (weak), 2 (moderate) and 3 (strong), multiplied by percentage of immunopositive tumour cells on a scale of 0-4 with 0 (<1%), 1 (1-25%), 2 (26-50%), 3 (51-75%) and 4 ($\geq 75\%$). Histoscore 1-3/12 was considered as low and $\geq 4/12$ as high COX2 expression. *Results:* Ethnically, there was a significant preponderance of Chinese in the SCC group and Malays in the ADC group ($p=0.032$). Mean age at presentation of SCC (57.5yrs) was significantly older than that of ADC at 47.9 yrs ($p=0.002$). 30/35 (87.5%) SCC and 34/35 (97.1%) ADC expressed COX2. Histoscores of ADC (median=4.00, interquartile range =3.00) was significantly higher ($p=0.014$) than those of SCC (median = 3.00, interquartile range=1.00). High histoscores ($\geq 4/12$) were more frequent in ADC (55.9%) compared with SCC (26.7%) ($p=0.018$). *Discussion:* In all, COX2 was expressed more frequently and had higher histoscores in ADC compared with SCC and this may account, at least in part, for the poorer outcome of ADC.

Poster 71. Collision tumour of ovary: an unusual combinationSarah Chiang Pik Yan¹, Zahrah Tawil¹, Razmin Ghazali², Vijayaletchumi AP Thadayathany³, Vicknesh Visvalingam³¹Department of Pathology, Hospital Selayang, ²Department of Pathology, Hospital Kuala Lumpur, ³Department of Obstetric and Gynaecology, Hospital Selayang

Background: Collision tumour is a rare entity with is defined by the presence of two adjacent but histologically distinct tumours without histological admixture in the same tissue or organ. Granulosa cell tumour accounts for about 5% of all ovarian neoplasms, however, their occurrence with serous cystadenoma is rare. **Case report:** We present a 46 year old lady who had granulosa cell tumour with serous cystadenoma. She presented with history of jaundice for 2 weeks. An ultrasound was performed and incidentally, an enlarged multiloculated right ovary was noted. She later underwent total abdominal hysterectomy and bilateral oophorectomy. Histological examination of the specimens showed serous cystadenoma with only a small focus of an adult type granulosa cell tumour despite generous sampling. **Discussion and Conclusion:** Granulosa cell tumors are rare neoplasms of the ovaries and their occurrence with serous cystadenoma is a recherche association. Multiloculated cysts have to be extensively examined grossly, so that any solid component which might have a bearing on prognosis of the patient is not missed. Further study and report on this tumour may be needed for better understanding and prognostication of patient.

Poster 72. Solid pseudopapillary neoplasm of pancreas: perplexing presentationNur Aini Abu Bakar¹, Nazifah Adznan¹, Zahrah Tawil¹, Salmi Abdullah¹, Krishnan Raman², Lim Kin Foong²¹Department of Pathology, Hospital Selayang, ²Department of Hepatopancreatobiliary Surgery, Hospital Selayang

Background: Solid pseudopapillary neoplasm is a rare, low grade non-endocrine neoplasm accounting for 1-2% of pancreatic neoplasm, usually at pancreatic tail of young women. **Case report:** We examined 2 cases. A distal pancreatectomy from a 55-year-old woman with an incidental finding of an abdominal mass during traditional massage, and a Whipple specimen from a 14-year-old boy who presented with vomiting and epigastric pain. CT scan revealed a large predominant cystic lobulated mass in the tail of pancreas of the first patient and MRI shows vascular lesion at the head of pancreas for the latter case. Tumour markers for both cases were normal. Histopathological examination of both lesions showed localized, well circumscribed, encapsulated solid-cystic mass, with extensive necrosis. Poorly cohesive monomorphic cells admixed with hyalinized to myxoid stroma forming pseudopapillary architecture. The cells have eosinophilic cytoplasm, round to oval indented nuclei with fine chromatin. Variable PAS and alpha-1-antitrypsin positivity of intra and extracytoplasmic hyaline inclusions were observed. Beta-catenin, CD10, vimentin, NSE and synaptophysin were positive with negative staining for chromogranin-A. **Discussion and Conclusion:** The presentation of these cases is not typical. These tumours are treatable with complete resection. Thus, correlation of imaging findings, clinical history and thorough histopathological examination are important to avoid missing the diagnosis.

Poster 73. Telomere erosion in breast cancer tissues from a subset of Malaysian women: a preliminary study on diagnostic utility

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Introduction: Shortened telomere is a hallmark of cancer immortalization. Nonetheless, the utility of telomere length as a biomarker for malignancy remains to be exploited. Breast carcinoma is the foremost cancer among Malaysian females, with infiltrating ductal carcinoma (IDC) being the major histological subtype. We compared telomere lengths of IDC and non-malignant breast tissue in Malaysian female breast cancer patients, to investigate the utility of telomere length measurement as a diagnostic aid. **Materials & Methods:** Two formalin-fixed, paraffin-embedded tissue blocks (one of malignant and the other of non-malignant breast tissue) from 25 patients with IDC were retrieved from University of Malaya Medical Centre Pathology archives. Quantitative fluorescence in situ hybridization was used to quantify telomere lengths of malignant and non-malignant interphase epithelial cells in tissue sections. The average telomere fluorescence intensity (TFI) of 20 non-overlapping interphase nuclei represents telomere length of the respective breast cell types. **Results:** Overall, TFIs of malignant breast cells (median=155.97; IQR=139.99-206.25) were significantly lower than TFIs of non-malignant breast cells (median=406.20; IQR=335.78-486.91; p<0.001). TFI of malignant breast cells for each individual patient was consistently lower than that of her non-malignant breast cells. **Discussion:** Our study demonstrated significant telomere shortening in breast cancer cells compared with non-malignant breast cells. This feature may have diagnostic value in differentiating malignant from benign breast tissues. To further challenge the clinical utility of telomere length measurements, the study should be extended to other breast pathologies such as epithelial hyperplasias and benign tumours.

Poster 74. Epidemiology of nasopharyngeal disorders in Hasan Sadikin Hospital Bandung, 2012-2015Ade Apon Nurhidayat¹, Birgitta M Dewayani², Bethy S Hernowo³*¹Department of Pathology, Resident of Faculty of Medicine, Padjadjaran University, Bandung, Indonesia; ²Department of Pathology, Pathologist of Hasan Sadikin Hospital, Padjadjaran University, Bandung, Indonesia; ³Head of Departement of Anatomical Pathology, Hasan Sadikin Hospital, Bandung, Indonesia*

Introduction: Nasopharyngeal disorders cases increase every year. There was limited report of epidemiological studies about the the nasopharyngeal disorders in Indonesia. This study was carried out to determine the epidemiology of nasopharyngeal disorders in Hasan Sadikin Hospital Bandung. *Materials & Methods:* This study was performed as descriptive – retrospective using secondary data of patients diagnosed as nasopharyngeal disorders in Department of Anatomical Pathology, Hasan Sadikin Hospital Bandung from January 2012 to June 2015. *Results:* We found 716 cases of nasopharyngeal disorders. The most common age was in the age range of 40-60 years old, 395 cases (55.2%) and the most common gender was male, 448 cases (62.6%). There were 552 cases of neoplasm (77.1%) and 164 cases of non neoplasm (22.9%). Neoplasm cases were divided into malignant neoplasm, 507 cases (70.8%) and benign neoplasm, 45 cases (6.3%). Cases of malignant neoplasm consists of nasopharyngeal undifferentiated carcinoma 395 cases (55.2%), squamous cell carcinoma 75 cases (10.5%), and others 37 case (5.2%). Cases of benign neoplasm consists of angiofibroma 33 cases (4.6%), polyp 7 cases (0.9%), and others 5 cases (0.7%). Non neoplasm cases consists of unspecific nasopharyngitis 149 cases (20.8%), tuberculosis nasopharyngitis 10 cases (1.4%) and others 5 cases (0.7%). *Discussion:* The most common age distribution of nasopharyngeal disorders is between 40-60 years old with male predominance. Nasopharyngeal undifferentiated carcinoma is the most common malignant neoplasm and angiofibroma is the most common benign neoplasm. The most common of non neoplastic lesion is unspecific nasopharyngitis.

Poster 75. Papsmear's profile in Hasan Sadikin General Hospital BandungYasni Iryani Widiasih¹, Birgitta M Dewayani², Bethy S Hernowo³*¹Department of Pathology, Resident of Faculty of Medicine, Padjadjaran University Bandung, Indonesia; ²Department of Pathology, Pathologist of Hasan Sadikin Hospital, Padjadjaran University Bandung, Indonesia; ³Head of Department of Anatomical Pathology of Hasan Sadikin Hospital, Bandung, Indonesia*

Introduction: Cervical cancer is a leading cause of cancer death in women. A key factor linked to the relatively high levels of cervical cancer in these populations is the lack of awareness and access to preventive methods. Pap smear is a microscopic examination that can detect cancer cells. *Materials & Methods:* This study is using retrospective-descriptive method. Data is obtained from secondary data of 2067 patients in Anatomical Pathology Department. The criteria are age distribution, symptom, and Bethesda based diagnosed consideration. *Results:* This study shows that the age range distribution are 14-80 year old. The result varies from NILM 179 patients (8.6%), Cervicitis NILM 910 patients (44.025%), ASC-US 77 patients (11.32%), ASC-H 77 patients (3.72%), LSIL 410 patients (19.83%), HSIL 234 patients (11.32%) and Carcinoma cervix 200 patients (9.67%). *Discussion and conclusion:* The most common female who perform the papsmear was at the age of 41-50, 726 patients (35.12%), and most common symptom is leucorrhea, 1018 patients (49.25%), the highest papsmear result is cervicitis, 910 patients (44.025%).

Poster 76. Pattern of specimen rejection in Chemical Pathology Unit of Centre for Pathology Diagnostic and Research Laboratories (CPDRL), Faculty of Medicine, Universiti Teknologi MARAArjoanna Farra Azizi^{1,2}, Noor Alicezah Mohd Kasim^{1,2}, Sarina Ali¹, Che Wan Juliana Che Wan Jaafar¹, Rafezah Razali¹*¹Centre for Pathology Diagnostic and Research Laboratories (CPDRL), Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia; ²Health and Wellbeing CoRe, Universiti Teknologi MARA, Selangor, Malaysia*

Introduction: The Chemical Pathology Unit of Centre for Pathology Diagnostic and Research Laboratory (CPDRL) Sg Buloh in UiTM Faculty of Medicine receives biochemistry specimens from their Clinical Training Centre (CTC) which consists of inpatient general wards, coronary care unit (CCU), intensive care unit (ICU), cardiothoracic intensive care unit (CICU), cardiac rehabilitation ward (CRW), emergency cardiac assessment unit (ECAU), invasive cardiac lab (ICL), imaging unit, specialist clinics and other nearby hospitals. The sample rejections are according to the rejection criteria defined by our laboratory. In this study, we aim to evaluate the trend of sample rejection for biochemistry tests according to the types of pre-analytical errors and collection areas. *Materials & methods:* The biochemistry samples sent to the Chemical Pathology Unit were recorded during 12 months duration between January to December 2015 in which 33,919 samples were received and 605 specimens were rejected. *Results:* The overall annual rejection rate was 1.78%. The top three rejection reasons were repetitive order (29.8%), haemolysis (29%) and no specimen received (12.3%). The main contributor for rejected specimens came from inpatient general wards (52.1%) followed by specialist clinics (28.1%). *Discussions:* We detected an overall specimen rejection rate of 1.78% in our Chemical Pathology Unit. As part of continuous medical education (CME), we plan to conduct a training session to educate staffs on minimizing sample rejection. We expect to decrease the overall specimen rejection rate post-training session in order to improve the total quality management of our CPDRL and promote patient safety.

Poster 77. Lepromatous leprosy BM involvement in an HIV-infected patient with no apparent skin lesion

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Introduction: Despite its elimination since 1994, cases of chronic granulomatous diseases caused by *Mycobacterium leprae* (leprosy) are still being actively reported in Malaysia. However, bone marrow (BM) involvement is uncommonly encountered. In the majority of the cases, the BM aspiration is performed for cytopenia after leprosy has been diagnosed. Interruption of immunologic balance is postulated to occur in patients co-infected with HIV and leprosy. We report a case of lepromatous leprosy BM involvement in an HIV-infected patient without apparent skin lesion. **Case report:** A 41-year-old Malay man with HIV infection was investigated for recurrent symptomatic anaemia. He required multiple hospital admissions and red cell transfusions over a period of 10 months. Physical examination revealed a massive splenomegaly but no obvious skin lesion noted. Laboratory tests showed anaemia (Hb 7.5 g/dL, MCV 72.8 fL, MCH 24.1 pg) and thrombocytopenia (Platelet 119×10⁹/L). BM trephine biopsy sections demonstrated an incidental finding of bone marrow granuloma with Virchow cells formation which are strongly positive with Fite-stain. Unfortunately the patient passed away 5 days after the diagnosis of lepromatous leprosy BM involvement was made. **Discussion:** This case illustrates the unusual presentation of lepromatous leprosy in an immunodeficient patient. More commonly, leprosy patients present with cutaneous and neurological symptoms, although biopsy-proven organ involvement have occasionally been reported. Its rarity and the atypical clinical findings caused a diagnostic dilemma. The importance of clinical and pathological correlation with a high index of suspicion of this rare condition in reaching a definitive diagnosis is also highlighted.

Poster 78. Iron deficiency anaemia among female adult in Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia

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Introduction: Iron deficiency anaemia (IDA) is a global health problem. It is considered as an important contributing factor to global burden of disease. It indicates poor nutrition and poor health. IDA is characterized by the reduction or absence of iron (Fe) stores in the body. This study was carried out to determine the prevalence of iron deficiency anaemia among female adult in Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia. **Materials & Methods:** A cross-sectional study was conducted among 178 female Malay adults aged between 18 to 35 years old. Haemoglobin (Hb) level was performed in all subjects and those with Hb level less than 12 g/dl were tested for ferritin levels to confirm IDA. Subjects suspected of IDA were also screened for thalassaemia. **Results:** Ninety-nine (55.62%) subjects were found to have Hb level less than 12 g/dl. Sixty five (36.52%) subjects were found to have ferritin level of less than 30 ng/ml and among them, five (7.69%) subjects were positive for thalassaemia. **Discussion:** The prevalence of IDA in this study is higher than previous report among non-pregnant female in Malaysia. This indicates that IDA is a significant health problem and requires attention as it may affect their ability to study. A further study of larger scale is required to confirm this finding.

Poster 79. A Case Report of Myoepithelial Carcinoma in the Breast

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Myoepithelial carcinoma is a rare entity in myoepithelial tumour of the breast. We report a case of a 77 year old Chinese lady with a 10 years history of left breast mass which was noticed to be rapidly growing for the past 6 months. Computed Tomography (CT) scan of the breast shown a large lobulated mass with multiple cystic component, extending to the skin and abuts the underlying pectoralis muscle. No distant metastasis seen. A preliminary biopsy was reported as adenomyoepithelioma. Mastectomy was then performed. Grossly, there were multiple large cystic tumours (largest 70 mm x 75 mm x 60 mm) with multiple surrounding firm whitish nodule with areas of haemorrhage and necrosis. The cyst contains mainly blood with necrotic tissue at the cyst wall. Histologically, there are proliferation of layers of myoepithelial cells around epithelial lined space with predominantly tubular growth pattern. There are many areas of large malignant cells, seen infiltrating the surrounding the benign tumour as well as the fibrous stroma in cords and trabeculae. These cells are highly pleomorphic with large vesicular nuclei. The benign myoepithelial cells are positive for p63 and actin but negative for S100 and CD10. The malignant cells are positive for CK A/E and EMA. Both epithelial and myoepithelial cells are negative for ER and PR with no expression of CerbB2. Ki-67 proliferation index is around 40-50 percent. All the lymph nodes are negative for malignancy. The diagnosis of Myoepithelial Carcinoma is made based on this.

Poster 80. Dermatofibrosarcoma Protuberans of the VulvaNorizal Mohd Noor¹, Siti Aishah Md. Ali¹, Juliana Yusuf², Nor Salmah Bakar¹, Noor Kaslina Mohd Kornain¹¹Cluster of Laboratory Medicine Sciences, ²Cluster of Women & Child Health Sciences, Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia

Dermatofibrosarcoma protuberans is a low grade mesenchymal tumour that rarely occurs in the women genital organs. A 73 year old Chinese lady presented with right inguinal swellings for the past 5 years, increasing in size and number. Biopsy was performed and was reported as cellular schwannoma. Computed Tomography (CT) scan showed an infiltrating ulcerative lesion in right groin with multiple enlarged right inguinal lymph nodes and a large solid nodule in right labia. Wide local excision was then performed. The specimen received was attached to a skin with nodular surface. Upon cut section, there are multiple nodules, the largest measures 50x55x30mm. Microscopic section of these nodules show proliferation of bland spindle cells with wavy nuclei but arranged in interlacing fascicles. Below these areas are multilobular nodules composed of diffuse, dermal to subcutaneous proliferation of spindle-shaped cells. The tumour cells extend into the subcutaneous tissue and stroma appears myxoid with increased mitotic activity. These cells are positive for CD 34 and vimentin and negative for S-100, desmin, SMA, CK, EMA and CD31. Patient was then sent to Oncology, Kuala Lumpur Hospital.

Poster 81. Elevated erythrocyte sedimentation rate (ESR) and its correlation with the clinical diagnosis in Clinical Training Centre (CTC) UiTM Sungai Buloh

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Introduction: The erythrocyte sedimentation rate, ESR is one of the most frequently used laboratory tests worldwide. The usefulness of the ESR is becoming limited as a result of low sensitivity and specificity and emergence of new methods of evaluating the diseases. The aim of this study was to assess the clinical relevance of elevated ESR and its correlation with the final clinical diagnosis in routine practice. *Materials & Methods:* A cross sectional, retrospective observational study was conducted in Haematology & Transfusion Medicine Unit, Centre of Pathology Diagnostic and Research Laboratories (CPDRL), CTC UiTM Sungai Buloh. Out of 323 patients, whose samples were sent for estimation of ESR, a total of 117 patients with ESR above 50 mm/hr were evaluated. Data was analysed using SPSS version 23. *Results:* In this study, 117 (36.2%) patients had elevated ESR with 85 (26.3%) of the patients had moderately elevated ESR (50-100 mm/hr) and 32 (9.9%) of them had markedly elevated ESR (>100 mm/hr). The mean age of the patients is 51 years old with almost 1:1 ratio of male to female patients. Among those with markedly elevated ESR, 65.5% were male and 34.4% were female, however the observed difference was not statistically significant ($p > 0.05$). The leading cause of markedly elevated ESR was infective and non-infective cardiovascular diseases (46.9%) followed by respiratory tract infections (5%) and acute inflammatory conditions (5%). *Discussion:* Most of patients with markedly elevated ESR in our centre have had underlying cardiovascular diseases. Thus ESR is a helpful indicator not only in the presence of inflammation, but also in response to tissue damage particularly in cardiovascular diseases.

Poster 82. Massive ovarian oedema: a malignant presentation of a benign conditionAsmawiza Awang¹, Razmin Ghazali¹, Melkeet Singh Chingarasingsh²¹Department of Pathology, ²Department of Obstetric and Gynaecology, Hospital Kuala Lumpur, Malaysia

Massive ovarian oedema is a rare cause of adnexal mass in which its clinical presentation may be difficult to distinguish from malignant mass. The oedema may occur in one or both ovaries as a result of incomplete intermittent torsion of the ovarian pedicle that disrupts the venal and lymphatic flow of the ovary. It has a higher incidence in child bearing age women in particular during their second and third life decade. We would like to highlight this entity as one of the differential diagnosis in young patients to avoid unnecessary aggressive treatments. We present a clinical case of a 27 years old nulliparous lady who was admitted with ovarian mass associated with significantly raised serum CA 125 and ultrasound revealed multilocular cystic and solid pelvic mass with ascites thus giving high Risk of malignancy index (RMI 1). Histopathological evaluation is essential because of the malignant impression made at pre- and intra-operatively. We attempt to perform literature review on this condition looking at its various clinical presentations and to remind us that this benign condition can be a mimicker of a malignant condition.

Poster 83. The B-cell lymphoma masquerade: case report of a rare presentationNavarasi S Raja Gopal¹, Shalini Seeritharan²¹Department of Pathology, ²Department of Radiology, Hospital Putrajaya, Malaysia

Introduction: Primary pulmonary diffuse large B-cell lymphoma (DLBCL) is extremely rare. It can be misdiagnosed as pulmonary tuberculosis or even as lung carcinoma, because it's non-specific clinical presentation. Histopathologically, the morphology of the DLBCL can masquerade as a poorly differentiated carcinoma. **Case description:** We report a case of a 22 year old male, who presented with non-productive cough for 3 months associated with significant weight loss and occasional blood-streaked sputum. He denied any "B" symptoms or tuberculosis contact. No family history of malignancy. He is a smoker since 15 years old, 2packs/day. The chest x-ray revealed a huge left lung mass. The CECT showed a heterogeneously enhancing left upper lobe mass with necrotic centre, measuring 17.8cm (W)x10.2cm(AP)x20cm(CC). Multiple smaller nodules are seen within the lung bilaterally, pancreas and left adrenal. The thoraco-abdominal lymph nodes were subcentimeter in size. The laboratory investigations showed mild anaemia and elevated serum LDH level. Histopathological examination of the lung biopsy revealed cohesive sheets and clusters of large epithelioid tumour cells, diffusely expressing LCA and CD20 with high proliferative index (Ki67-80%). They did not express cytokeratin or neuroendocrine markers. **Discussion:** Primary pulmonary lymphoma is very rare. The clinical presentation and imaging findings can be variable and non-specific. The diagnosis needs to be confirmed by lung biopsy. Rarely DLBCL can show epithelioid morphology. Hence, in a poorly differentiated malignant tumour, DLBCL needs to be considered as one of the differential diagnosis. Utilizing basic hematology markers as part of initial immunohistochemical screening panel is feasible in such situation.

Poster 84. Smear-negatives in new cases of tuberculosis

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Introduction: World Health Organisation (WHO) has reported a wide range of smear negative tuberculosis rate worldwide, from 20% in certain countries to 60% in others. However, updated data from Malaysia is lacking. We aimed to investigate the rate of sputum smear-negative tuberculosis among new TB cases in our centre. **Materials & Methods:** We retrospectively studied all new cases of culture-confirmed tuberculosis patients attending clinics between 2011 to 2015. Their age, gender and HIV status were documented for analysis. Cases without prior sputum smear AFB microscopy performed prior to sputum examination culture were excluded. **Results:** A total of fifty cases fulfilled our inclusion criteria and was suitable for analysis. Smear-negative tuberculosis rate was calculated to be at 40% (twenty cases). There were equal number of ten men and women with smear-negative tuberculosis, in contrast to eighteen men and twelve women who were smear-positives. Mean and median ages for smear-negative tuberculosis patients are 49.1 and 54.5 respectively, compared to 50.9 and 56.3 of the smear-positives. None of the patients in this study were known to be HIV positives. **Discussion:** Forty percent of new, culture-confirmed tuberculosis cases in our centre were of smear-negatives. Higher percentage of women (45.5%) was smear-negative tuberculosis patients compared to that of men (35.7%). Age of patients with smear-negative tuberculosis appear to be lower by 5 years, compared those of smear-positives. Further studies are recommended to understand the factors contributing to smear-negative TB cases. This study also emphasises the importance of requesting TB culture test in every newly suspected cases.

Poster 85. A Rare Case of Pulmonary Blastoma in a Young AdultNorizal Mohd Noor¹, Nor Salmah Bakar¹, Nurul Yaqeen Mohd Esa², Noor Kaslina Mohd Kornain¹¹Cluster of Laboratory Medicine Sciences, ²Cluster of Clinical Medicine, Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia

Pulmonary blastoma is rare intrathoracic tumour, typically occurs in infant and children of less than 4 year old. This is a case of a 20-year-old Chinese man, with history of non-productive cough for more than 2 weeks, associated with episodes of shortness of breath and minimal chest pain. He was previously diagnosed with pneumonia 2 months prior to current presentation, which was completely resolved. He then developed left mid-thoracic pleural effusion, in which the ultrasound findings show pleural space multiloculation with septation of the left upper lobe. Computed Tomography (CT) scan of the thorax shows a huge left anterior mediastinal mass. Microscopically, the biopsies show fragments of lung tissue, infiltrated by malignant biphasic tumour. The epithelial component is composed of malignant glands growing in tubules, resembling fetal bronchioles, embedded in sarcomatous embryonic-appearing mesenchyme. There are mild atypia seen in the mesenchyme some in form of multinucleated giant cells. The mesenchyme element are stromal cells with blastema-like configuration, some small foci shows storiform pattern. The epithelial elements are positive for CKA/E. Both elements are negative for TTF1, CK7, CK20, PLAP, AFP, CD45, p63, CK5/6, synaptophysin, chromogranin, NSE, CD5 and C-kit. Patient was then referred to oncologist.

Poster 86. Immunoeexpression of p53 mutant in Serous Epithelial Ovarian Carcinoma of Indonesian Women - Correlation with Histopathological Parameters

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Introduction: Ovarian cancer was the seventh leading cause of death from cancer among women worldwide including in Indonesia. Serous ovarian carcinoma is the most common subtype. According to new WHO classification, serous ovarian carcinoma is divided into high grade serous (HG-SC) and low grade serous ovarian carcinoma (LG-SC) subtype. p53 genes have important roles in carcinogenesis and progression of serous ovarian carcinoma, including tumor invasion which can shows by lymphovascular invasion. Lymphocytic infiltration also considered have prognostic roles but the result is still controversial. The purpose of this study is to evaluate the correlation between immunoeexpression of p53 with lymphocytic infiltrate and lymphovascular invasion in serous ovarian carcinoma. **Methods:** 32 cases of serous ovarian carcinoma diagnosed in Pathology Laboratory Padang were included in this study. Using two tier grading system by Malpica, samples were reviewed for subtype and histopathological grade, lymphocytic infiltrate and lymphovascular invasion. Expression of mutant p53 was analyzed using immunohistochemistry assay. **Results:** The patients's ages ranges from 28 to 67 years old, HG-SC was found in older age (49.5 ± 9.89 years). Positive p53 mutant immunoeexpression has been found in 16 cases (12 cases HG-SC and 4 cases LG-SC). Lymphovascular invasion was found in 62.5% samples and mild lymphocytic infiltration was found in 68.8% cases. Statistically there were no significant correlation between p53 immunoeexpression and lymphocytic infiltrate and lymphovascular invasion. **Conclusion:** This study shows no significant correlation between p53 mutant immunoeexpression with lymphocytic infiltrate and lymphovascular invasion.

Poster 87. Protective effects of dadih and ice cream dadih against lymphocyte infiltration and destruction of mice (*Mus musculus*) mucosal intestinal tissue strain Balb/c infected by *Salmonella typhimurium*Chaliq Akbar¹, Aswiyanti Asri², Nita Afriani³*¹Student of Faculty Medicine, Andalas University, Padang, Indonesia; ²Department of Pathology, Faculty of Medicine, Andalas University, Padang, Indonesia; ³Department of Histology, Faculty of Medicine, Andalas University, Padang, Indonesia*

Introduction: Dadih is a Minangkabau traditional probiotic food which can prevent diarrhea. Sour taste and mushy texture of dadih is less desirable by the processed form such as ice cream dadih. The aim of this study is to investigate effects of dadih against *Salmonella typhimurium* infection in intestinal tissue of mice strain Balb/c. **Methods:** This is an experimental study with randomized post test only control group design. Twenty five mice were divided into control group (C) and treatment groups (T1, T2, T3 and T4). The treatment groups were given dadih and ice cream dadih with consistency 75%, 50% and 25% for 14 days. At the 14th days, all groups were infected by *Salmonella typhimurium* orally as much as 100 uL 108CFU/ml. Observation of mice intestinal tissue was done on the 7th days after infection. Data were analyzed with comparison test with $\alpha = 0.05$. **Results:** The most severe lymphocyte infiltration and mucosal intestinal damage was found in control group, whereas the most mild one was T1. The most mild damage between ice cream dadih's groups was T2. There was significant differences between control group and treatment groups and between ice cream dadih's treatment group. **Conclusions:** Probiotic component in dadih and ice cream dadih prevented lymphocyte infiltration and mucosal destruction by inhibition of NF κ B translocation and immunoglobulin A secretion. There was protective effect of dadih and ice cream dadih against infection of *Salmonella typhimurium*.

Poster 88. Primary lung synovial sarcoma: a case report

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Introduction: Synovial sarcoma (SS) is a soft tissue sarcoma with variable mesenchymal and epithelial differentiation characterized by a specific chromosomal translocation t(X;18)(p11;q11). It shows predilection for young and middle-aged adults. Pulmonary SS usually presents as a peripheral, parenchymal tumour nodule. **Case presentation:** A 39 year old gentleman, a chronic smoker presented with chronic productive cough for 5 months and progressive shortness of breath, hoarseness of voice, loss of appetite and weight for 3 weeks. CT thorax shows large right upper lobe mass with extensive local infiltration, extending into supraclavicular region and intraspinal canal causing mass effect with tracheal shift. Histopathological examination of lung biopsy shows spindle cells in short fascicles in hemangiopericytomatous pattern with no epithelial elements detected. Immunohistochemical study supports the diagnosis of a monophasic SS. **Discussion:** A soft tissue primary must be excluded before the diagnosis of primary pulmonary SS is made. Other sarcomatoid carcinoma, mesothelioma and mesenchymal neoplasms need to be excluded. A combination of clinical, histological, immunohistochemical and cytogenetic features can differentiate SS from these entities especially the diagnostic translocation.