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The Annual Scientific Meeting of College of Pathologists, Academy of Medicine of Malaysia: Opportunities and Challenges in Laboratory Medicine, was held at Riverside Majestic Hotel, Kuching, Sarawak on 27-28 June 2019. Abstracts of K. Prathap Memorial Lecture, plenary, symposium and paper (poster) presented are as follows:

K Prathap Memorial Lecture:
Opportunities and challenges for laboratory professional in patient safety

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Pathology has been the engine of healthcare system in understanding diseases and in the last few decades in monitoring therapy. However, the approach and technique we use remain very much the same. As we move into the future of the digital age and artificial intelligence, the challenge is should we continue doing the same or do we need to change and reinvent the discipline and the service we provide. To remain relevant, we have to embrace the change and move with the times. The digitization of pathology laboratories makes the specialty more efficient, specimen more reproducible and the work of pathologists less cumbersome. New technologies that produce biomedical "big data" (next generation sequencing, multiparameter / multiplex flow cytometry, high-throughput proteomics and metabolomics, systems biology analysis) have also caused us to rethink the best approach to diagnostics. While these opportunities and challenges seem daunting, we still have to grapple with old challenges of funding and leadership.

Plenary 1:
Challenges in diagnosis of monoclonal gammopathy

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The monoclonal gammopathies (MG) are a group of disorders characterised by the proliferation of clonal plasma cells to produce resulting in a detectable abnormality called monoclonal component or M-protein or paraprotein. Direct measurement of the M-protein spike by electrophoresis and immunochemical measurements of specific isotypes or free light chains pairs has provided useful information about the quantity of M-protein. Nonetheless, quantitation of M-protein by electrophoretic method gives suboptimal measurements on small M-proteins. In addition, measurements by electrophoresis of M-proteins migrating in the β- and α-regions are difficult due to the presence of normal serum proteins in those regions. The nephelometric quantitation of immunoglobulins (Igs) is a simple automated method that uses anti-human Ig antigen binding fragments (Fabs) that target the constant region of Ig. The method measures both monoclonal and polyclonal immunoglobulins, and therefore, its diagnostic use for identification of monoclonal proteins is not recommended and is also of no value for biclonal and triclonal gammopathies. Use of the serum free light chain (FLC) immunoassay, has led to improvements in the diagnosis and monitoring of patients with plasma cell dyscrasia and other monoclonal gammopathies. Not all MG secrete excess FLC. Abnormal serum FLC ratios have only been detected in 90–95% of intact Ig multiple myeloma and 40% of MGUS. Since these two patient groups can be easily diagnosed by serum M-proteins by protein electrophoresis, a combination of tests is needed to detect all MGs. Nephelometric methods using antisera specific for Ig heavy and light chain epitopes separately quantitate IgG kappa and IgG lambda, IgA kappa and IgA lambda, and IgM kappa and IgM lambda and may be useful for monitoring monoclonal proteins migrating in the beta fraction. The heavy-light, isotype-specific kappa to lambda ratio has been proposed as a potential monitoring method for IgA or IgM M-proteins migrating in the beta fraction. Although the assay is not sensitive enough to use as a routine screening method for MM, a 97% sensitivity observed in IgA MM and IgA MGUS indicates that almost all IgA MM patients can be monitored by HLC for both detection of the disease clone and quantitation using the IgA HLC assay. A 24-hour urine collection allows the quantitation of both the albumin and M-protein that has been rapidly cleared by the kidneys. The potential broad use of mass spectrometry for MG has been recently demonstrated by the application of matrix assisted laser desorption ionization – time of flight instruments (MALDI-TOF) for detecting monoclonal proteins. The Mayo Clinic group performed a large retrospective study in which patients with an assortment of plasma cell proliferative diseases had SPE, IFE, and FLC as well as urine protein electrophoresis and IFE performed at the time of diagnosis. The study shows patients would have had M-proteins detected by the various tests singly or in combination and if urine assays are removed from the diagnostic panel, there is no decrease in sensitivity. This and other studies have led the IMWG to recommend a panel of serum protein electrophoresis, immunofixation electrophoresis and FLC to screen for a MG; the inclusion of diagnostic urine testing is only recommended if amyloidosis is suspected, which simplifies collection for the patient and workflow for the laboratory and reduces costs as well.

AP-09. Classical Hodgkin's lymphoma mimicking necrotizing granulomatous lymphadenitis: The conundrum

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Introduction: Granulomas may sometimes occur in patients with malignant tumours and lymphomas. Such reaction is reported in 4.4% of malignancies, 7.3% of non-Hodgkin's lymphomas (NHL) and 13.8% of Hodgkin's lymphoma (HL). The coexistence of HL and granulomas can be tricky and are very rare. However, atypical presentation of HL with formation of epithelioid cell granuloma along with tumour cells has been known in literature. HL mostly affects the age group of 20-34 years with median age of 39 years. *Case Report:* We present a case of a 60-year-old female with multiple comorbidities who presented with history of fever, loss of weight and loss of appetite for 2 weeks duration. Imaging modalities included contrast-enhanced computed tomography (CECT) of the abdomen and pelvis which showed persistent liver and splenic hypodense lesions with multiple abdominal lymphadenopathies. Pathology demonstrated mixed cellularity HL mimicking a necrotizing chronic granulomatous lymphadenitis. *Learning Points:* Presence of granuloma in HL is a common finding which is often a source of diagnostic confusion. The morphology of Reed-Sternberg (RS) cells and immunohistochemical (IHC) stains are most helpful in differential diagnosis. Pathologists should always recommend further diagnostic investigations to be performed in cases of negative acid-fast staining granulomas.

AP-10. Clear cell hidradenoma of the breast: A case report

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Introduction: Clear cell hidradenoma is a benign skin adnexal tumour which arises from the excretory ducts of eccrine glands. This tumour is commonly seen on the face and upper extremities. Clear cell hidradenoma of the breast is rare with less than 20 reported cases in the literature. *Case Report:* A 59-year-old female presented with a painless right breast lump for the past 5 years. The lump was painless but slowly growing in size. A biopsy of the lesion was done which showed a breast tumour with clear cell change. She subsequently underwent a wide local excision of the lesion. Intraoperative findings showed a solid tumour located at the retroareolar region of the right breast. Macroscopically, there was a tumour beneath the overlying skin measuring 30x20x15 mm with greyish cut surface and lobulated margins. Histology examination showed a circumscribed tumour within the dermis with extension into the subcutaneous adipose tissue. The tumour cells were composed of a mixture of polygonal cells exhibiting small hyperchromatic nuclei with abundant clear cytoplasm and cells with eosinophilic cytoplasm. No significant nuclear atypia was seen. In view of the location of the lesion and histomorphological features, other tumours such as primary breast ductal carcinoma, adenomyoepithelioma, sebaceous carcinoma and metastatic clear cell carcinoma are possible differential diagnoses. Immunohistochemical studies showed the cells were positive for Cytokeratin 7, Cytokeratin AE1/AE3 and p63 and negative for Estrogen receptor, PAX8, CD10, S100, SMA, Mammaglobin and GCDFP-15. Ki67 proliferative index was less than 1%. Patient was well post-procedure. *Learning Points:* Clear cell hidradenoma of the breast is thought to arise from the eccrine and apocrine glands of the nipple and subareolar tissue. Skin adnexal tumours may be rare in the breast but are important to consider in the differential diagnosis of breast neoplasms.

AP-11. Giant cell rich osteosarcoma: A case report

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Introduction: Many osteosarcomas contain benign osteoclast-like giant cells. One of the subtypes of conventional osteosarcoma is giant cell-rich osteosarcoma which is characterized by proliferation of atypical stromal cells with abundant osteoclast-like giant cells. It is a rare tumour that is difficult to distinguish from other bone lesions, such as giant cell tumours of the bone. The location and radiographic features of these tumours may be similar and the histologic differentiation between a giant cell rich osteosarcoma and giant cell tumour can be difficult. *Case Report:* We report a case of a 45-year-old lady with a left knee swelling for four years. The swelling was increasing in size and painful for the last six months associated with limited range of movement and limping gait. Radiographic investigation showed a left proximal tibial meta-epiphysis lesion with aggressive features. Radiological diagnosis of telangiectatic osteosarcoma with differential diagnosis of giant cell tumour was made. Initial biopsy showed features consistent with giant cell tumour of the bone. She was started on pamidronate infusion and subsequently had curettage with bone cement and proximal tibial plating. A few months later, she developed pain and swelling over the left leg. CT scan during this visit showed aggressive lesion at left knee region with left proximal tibia destruction and multiple lung metastasis. Above knee amputation was performed and diagnosis consistent with giant cell rich osteosarcoma was made. The patient underwent further treatment in the oncology department. However, she defaulted after one year of follow-up. *Learning Points:* The major challenge is differentiating malignancy in giant cell tumour with giant cell rich osteosarcoma. Giant cell rich osteosarcoma has certain characteristics although lacking in specificity; thus, integration of clinical, radiological and pathological features are important for the final diagnosis. When a giant cell rich osteosarcoma occurs in a common location for giant cell tumour, adequate sampling is mandatory as histology becomes the most important factor in differentiating the two.