The International Congress of Pathology & Laboratory Medicine 2023: Precision Medicine: Revolutionizing Pathology in Genomic Era, organised by the College of Pathologists, Academy of Medicine of Malaysia and at World Trade Centre Kuala Lumpur on 20-22 September 2023

ICPALM 2023: International speakers

1. Anatomical Pathology

Molecular classification of gastric carcinoma
Corrado DÁrrigo
Poundbury Cancer Institute.

During the past two decades there has been significant improvement of cancer outcomes due, at least in part, to increasing use of biological therapies. This requires the identification of specific subgroup of patients that may benefit from particular targeted treatment. The classical morphological classification of tumours is inadequate to support this transformation of treatment modalities. New molecular classifications have emerged for a number of cancer sites, based on comprehensive analyses of large number of parameters ("multi-omics"). In order to make it accessible to all patients, multi-omics classifications have been implemented into the histopathology diagnostic routine using a handful of on-slide tests.

Such implementation has yet to happen in gastric cancer (GC) and patients access to effective targeted treatment remains limited. We present an overview of the current molecular classification for gastric cancer and a study to assesses the feasibility of implementing a molecular classification based on 4 groups of on-slide tests. These are ISH for EBER (for the identification of GC EBV+), IHC for MLH1 and MSH2 (for the identification of GC MMR-deficient), IHC for E-cadhering and β-catenin (for the identification of GC EMT or epithelial-mesenchymal transformation) and IHC for p53 (for the identification of p53 mutated and p53 wild type GC). The prognostic and predictive implications for GC patients will be discussed.

Rewriting the Her2 testing handbook
Corrado DÁrrigo
Poundbury Cancer Institute.

Histopathologists have been providing Her-2 status for breast cancer (BC) patients for over 4 decades. Testing aimed at identifying a small (12-15%) proportion of BC patients that have Her2 gene amplification as a main oncogenic driver in their cancer. Direct blocking of the Her2 receptor with mAb-based therapy is an effective treatment only in patients with Her2 over-expression or amplification.

Recently, targeting Her2 with specific antibodies that deliver cytotoxic payloads inside the tumour cells (ADC or antibody-drug conjugates) has shown effectiveness also in BC that has low level expression of Her2 but lacks amplification. Regulatory approval of this treatment means de facto that the traditional binary classification (positive/negative) has to be replaced with a new ternary classification (high/low/zero) and that the interpretation of the IHC staining needs to be re-focused to recognise the new thresholds.

We developed focused algorithms and training programmes for the interpretation of Her2 IHC in the new diagnostic landscape. We will be discussing the re-evaluation of the scope and parameters for Her2 testing in BC with particular focus on the analytical performance of current tests, the identification of various staining patterns and their significance, the interpretative algorithm and the new (2023) release of the ASCO-CAP and RCPath guidelines.

Surgical pathology of low-grade epilepsy-associated neuroepithelial tumors (LEAT): role of molecular genetic testing and surrogate immunohistochemical markers
Hajime Miyata
Departments of Neuropathology, Research Institute for Brain and Blood Vessels, Akita Cerebrospinal and Cardiovascular Center in Akita City, Japan

Low-grade epilepsy-associated neuroepithelial tumors (LEAT) is a generic term for CNS WHO grade 1 to 2 or equivalent tumors, with epileptic seizures as the main symptom developing mostly by the age of 15 years, and 88% of patients show a favorable postoperative seizure outcome, representing a clinicopathological concept distinct from the WHO classification of brain tumors. A past survey reported that the majority of LEAT consisted histopathologically of neuronal and mixed neuronal-glial tumors frequently localized in the temporal lobe, with ganglioglioma (GG) and dysembryoplastic neuroepithelial tumor (DNT) being the most common histopathological diagnoses comprising 60 to 90 % of cases. However, disagreement between experts on diagnosing GG and DNT was not uncommon, particularly when specific histological features were not

Discussion: Microscopically, the tumours from right tonsil and brain were composed of round to oval epithelioid cells and occasional spindle-shaped cells arranged predominantly in sheets. The neoplastic cells exhibited mild pleomorphism, having open nuclear chromatin with prominent nucleoli and moderate amount of eosinophilic cytoplasm. These tumour cells were immunoreactive to smooth muscle actin, Vimentin and EBV-encoded RNA (EBER) in situ hybridization. EBV-associated smooth muscle tumour is very rare in the head and neck region. Nonetheless, it has a predilection to occur in the sites that are unusual for conventional smooth muscle tumours. The diagnosis of EBV-associated smooth muscle tumour should be considered in the differential diagnoses of a mesenchymal tumour in immunocompromised patients.

AP7: Quantitative interpretation of tumour infiltrating lymphocytes (TILs) of triple negative breast cancer
Nurkhairul Bariyah Baharun[1,2], Afzan Adam[3], Reena Rahayu Md Zin[1,] Nasir M. Rajpoot[4], Qiaoyi XU[3]
[1]Faculty of Medicine, The National University of Malaysia; [2]Faculty of Health Sciences, Universiti Selangor [3]Centre for Artificial Intelligence Technology (CAIT); Faculty of Information Science & Technology, The National University of Malaysia; [4]Department of Computer Science, University of Warwick, United Kingdom

Introduction: The potential of TILs as prognostic markers in TNBC has been recognised. However, the guideline developed by the Immune-Oncology Biomarker Working Group (TIL-WG) relies on a subjective method resulting in low precision. To address these limitations, the TIL-WG recommends using computational algorithms adhering to their guidelines for an automated TILs assessment model. However, the training and validation of such a model still requires manual ground truth annotations. To address this gap, this study aims to create a digital dataset of whole slide images (WSI) for TNBC of H&E and IHC-stained slides. *Materials & Methods*: A total of 46 TNBC cases was selected and stained with H&E and IHC stains. The slides were then scanned at 20x magnification. Two pathologists independently reviewed the slides following the TIL-WG guidelines, assessing the percentage of sTILs and iTILs per mm2 of the tissue. The interrater reliability was assessed using the intraclass correlation coefficient (ICC) and Cohen's kappa (κ). A third pathologist reviewed cases with poor agreement, and contributing pathologic features were examined. *Results:* The results showed good consistency (ICC = 0.79) and moderate agreement (ICC = 0.65) for sTILs evaluation, while moderate reliability was observed for iTILs evaluation (ICC consistency = 0.70, ICC agreement = 0.61). Cohen's kappa analysis demonstrated fair agreement for both sTILs and iTILs in manual TILs assessment. *Conclusion:* This study has developed a digital dataset of TNBC H&E and IHC stained slides with manual pathologist-derived scores. This dataset serves as a valuable resource for developing computational algorithms that can accurately evaluate TILs in TNBC.

AP8: Association between dietary behaviours and weight changes among UNIMAS pre-clinical medical students during Covid-19 period
Law LS[1], Than TA[2], Adha Najiwa A[2], Ngee JY[2], Nur Athirh M[2], Syarifah SWRA[2]
[1]Community Medicine and Public Health Department, Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS), Kota Samarahan, Sarawak, Malaysia [2]Pathology Department, Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS), Kota Samarahan, Sarawak, Malaysia

Introduction: Movement Control Order (MCO) during COVID-19 pandemic period was believed to influence the routine lifestyle among Malaysians due to confinement of individuals to their home. This study was conducted to investigate the changes of lifestyles and body weight status among university students and the factors that associated with the changes in Kuching, Sarawak. *Materials and Methods:* This cross-sectional study involved 214 university students through convenient sampling. Data collection was conducted by using a structured questionnaire that was disseminated via google form. Information on the sociodemographic profiles, dietary behaviours (eating of leftover food, water drank per day, and meal skipping), weight changes, and self-reported weight and height were collected. The chi-square test of independence was used during data analysis. *Result:* The study revealed that 35% of respondents perceived themselves as "increase a lot of weight" and 39.3% of the respondents declared skipping one or more of the main meals. The weight change was associated with race (p=0.012), change in number of daily meals (p=0.003), body weight status (p<0.001) and eating habits during COVID-19 pandemic(p=0.002). *Discussion:* Regular health promotion in university campus is needed to increase awareness among the university students about the importance of healthy eating.

AP9: Lymphangiomatous polyp arising from the tonsil
Choo Xiang Tan[1], Wei Ming Phang[1], Yin Ping Wong[1,2], Geok Chin Tan[1,2]
[1]Department of Pathology, Faculty of Medicine, Universiti Kebangsaan Malaysia; [2]Department of Laboratory Diagnostic Service, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia

Introduction: Lymphangiomatous polyp of the tonsil is a benign tumour. Its differential diagnosis includes fibroepithelial polyp, squamous papilloma, angiofibroma, haemangioma, arteriovenous malformation, hamartoma and lymphangioma. *Case report:* A 33-year-old man presented with 2 months history of feeling of foreign body sensation in the throat. He had a history of recurrent tonsillitis of about 2 to 4 times each year. There was neither pain nor itchiness. There was no significant past medical or surgical history. Examination revealed a nodular red coloured polyp on the left tonsil. Intraoperatively, both tonsils were enlarged with a polyp at the inferior pole of the left tonsil. Bilateral tonsillectomy was performed. Examinations of the oral cavity, nasopharynx, and larynx were normal. Histopathological examination showed a polyp arising from the surface of the tonsil. The polyp was soft, light brown and had a smooth surface. It measured 1.0 x 0.8 x 0.5 cm. Histologically, it was covered by squamous epithelium and is composed of numerous vascular channels containing lymphocytes and eosinophilic material, in a fibrous stroma. Immunohistochemically, the endothelial cells were positive toward CD31 and D2-40. At one week follow up, patient was well with no bleeding. *Discussion:* The characteristic histological features of a lymphangiomatous polyp are benign vascular proliferation with variable fibrous, adipose and lymphoid stromal components. Nested intraepithelial