2022 HONG KONG PATHOLOGY FORUM

19 February, 2022 (Sat)

Via Zoom

Organised by

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Department of Pathology
香港大學病理學系

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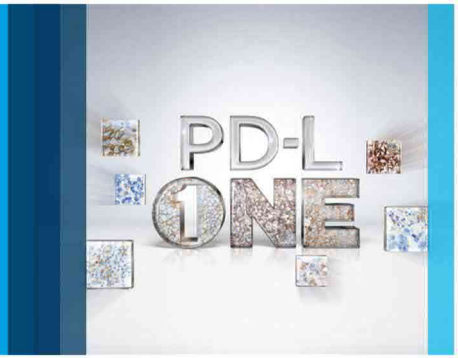

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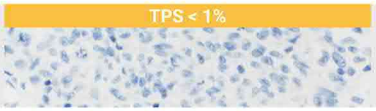
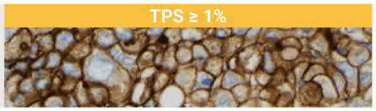
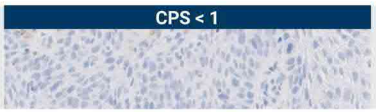
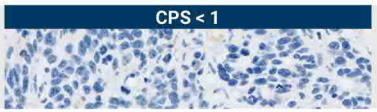
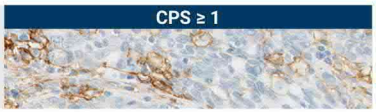
Tumor Proportion Score (TPS) Indication

	TPS < 1%	TPS ≥ 1%
Non-small Cell Lung Cancer (NSCLC) TPS ≥ 1%		

Combined Positive Score (CPS) Indications

	CPS < 10	CPS ≥ 10
Triple-Negative Breast Cancer (TNBC) CPS ≥ 10		

	CPS < 1	CPS ≥ 1
Head and Neck Squamous Cell Carcinoma (HNSCC) CPS ≥ 1		
Gastric or Gastroesophageal Junction (GEJ) Adenocarcinoma CPS ≥ 1		
Cervical Cancer CPS ≥ 1		

	CPS < 10	CPS ≥ 10
Urothelial Carcinoma CPS ≥ 10		

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CPS Indications (Continued)

	CPS < 10	CPS ≥ 10
Esophageal Squamous Cell Carcinoma (ESCC) CPS ≥ 10		

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PD-L1 protein expression in NSCLC is determined by using Tumor Proportion Score (TPS), which is the percentage of viable tumor cells showing partial or complete membrane staining at any intensity.

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Tumor Indication	PD-L1 Expression Level	Intended Use
NSCLC	TPS ≥ 1%	PD-L1 IHC 22C3 pharmDx is indicated as an aid in identifying NSCLC patients for treatment with KEYTRUDA® (pembrolizumab).**
Gastric or GEJ Adenocarcinoma	CPS ≥ 1	PD-L1 IHC 22C3 pharmDx is indicated as an aid in identifying gastric or GEJ adenocarcinoma patients for treatment with KEYTRUDA® (pembrolizumab).
ESCC	CPS ≥ 10	PD-L1 IHC 22C3 pharmDx is indicated as an aid in identifying ESCC patients for treatment with KEYTRUDA® (pembrolizumab).
Cervical Cancer	CPS ≥ 1	PD-L1 IHC 22C3 pharmDx is indicated as an aid in identifying cervical cancer patients for treatment with KEYTRUDA® (pembrolizumab).
Urothelial Carcinoma	CPS ≥ 10	PD-L1 IHC 22C3 pharmDx is indicated as an aid in identifying urothelial carcinoma patients for treatment with KEYTRUDA® (pembrolizumab).**
HNSCC	CPS ≥ 1	PD-L1 IHC 22C3 pharmDx is indicated as an aid in identifying HNSCC patients for treatment with KEYTRUDA® (pembrolizumab).**
TNBC	CPS ≥ 10	PD-L1 IHC 22C3 pharmDx is indicated as an aid in identifying TNBC patients for treatment with KEYTRUDA® (pembrolizumab).

*** See the KEYTRUDA® product label for specific clinical circumstances guiding PD-L1 testing.*

References: 1. PD-L1 IHC 22C3 pharmDx [Instructions for Use]. Carpinteria, CA: Dako, Agilent Pathology Solutions; 2020. **2.** Keytruda [package insert]. Kenilworth, NJ: Merck & Co., Inc.; 2020. **3.** Data on file. Agilent Technologies, Inc.

We thank the IUSCC Cancer Center at Indiana University School of Medicine, for the use of the Tissue Procurement and Distribution Core, which provided Dako North America, Inc. service. The data and biospecimens used in this project was provided by US Biolab, Rockville, MD and by SageBio LLC, Sharon, MA, USA with appropriate ethics approval and through Trans-Hit Biomarkers Inc.

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Welcome from the Forum Chairperson

On behalf of the Department of Pathology of The University of Hong Kong and the Organsing Committee, I have great please in welcoming you to the Hong Kong Pathology Forum 2022. In this Forum, we hope to share updated pathology knowledge and experience with our medical community and, together with the Pathology profession, to enhance the community's understanding of the role of pathologists in Hong Kong.

As in the previous years, this Forum features a very strong program, assembling multiple symposia of different disciplines of Pathology. We have topics in pancreatic & lung cancer, immunology, chemical pathology as well as heamatology. Each of the symposia provides updated pathological and molecular knowledge and clinical management of the disease, so as to enhance understanding in a more comprehensive pathological-clinical interactive picture.

We are honored to have prominent overseas and local experts attending the Forum. We are particularly pleased to have Professor Ming-Sound Tsao of the University of Toronto, Canada, Professor Ralph Hruban Thompson of Johns Hopkins University, USA, both being giants in their own fields, to deliver the Hou Pao-Chang Medical Memorial Fund Lecture and the James Gibson Lecture, respectively. Dr Elizabeth Thompson of Johns Hopkins University, USA is also invited to give a presentation in "State-of-the-Art" Lecture.

I hope you will find this Forum rewarding and enjoyable.

Finally, I would like to sincerely thank the Hou Pao-Chang Medical Memorial Fund, the James Gibson Fund, and our sponsors, whose generous support has greatly contributed to the success of this Forum.

Professor Ui Soon Khoo
Ada MF Chan Professor in Oncological Pathology
Department of Pathology
The University of Hong Kong

Hong Kong Pathology Forum

The Hong Kong Pathology Forum, organised by the Department of Pathology of The University of Hong Kong, has the objective to provide updated knowledge in different disciplines of Pathology, through state-of-the-art presentations by invited speakers who are distinguished specialists in their respective fields.

The Hong Kong Pathology Forum also incorporates the Hou Pao-Chang Medical Memorial Fund Lecture. The Hou Pao-Chang Medical Memorial Fund was established by Professor Laurence Hou to commemorate his distinguished father who was Head of the Department of Pathology at The University of Hong Kong from 1948 to 1960.

Since 2015, the Forum also incorporates the James Gibson Lecture. The James Gibson Fund was established by friends and colleagues of Emeritus Professor James Gibson, who was the Chair of Pathology at The University of Hong Kong from 1963 to 1983, to mark his retirement after many years of distinguished service to the University and the community.

Our target audience includes pathologists, clinicians, physicians, other medical practitioners as well as allied health professionals. The year's program aims to provide cutting-edge as well as practical knowledge in Pathology pertinent to different sub-disciplines in clinical practice. Overall, this Forum is aimed to share cutting-edge developments in Pathology and promote communication among our professional colleagues and with the medical communities.

Organising Committee

Chairperson

Professor Ui Soon Khoo
Ada MF Chan Professor in Oncological Pathology
Department of Pathology
The University of Hong Kong

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Professor Annie Nga Yin Cheung
Laurence LT Hou Professor in
Anatomical Molecular Pathology
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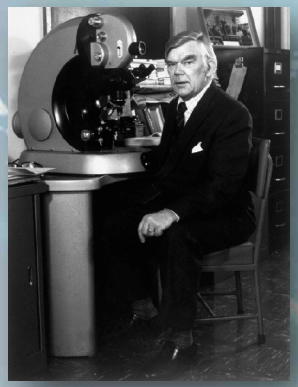
Dr Elaine Yuen Ling Au
Consultant
Department of Pathology
Queen Mary Hospital

Dr Philip Pun Ching Ip
Clinical Associate Professor
Department of Pathology
The University of Hong Kong

James Gibson Fund



Professor James Gibson was the Head of Pathology from 1963 until his retirement in 1983, Dean of Medicine for six years from 1972 to 1978, and Pro-Vice-Chancellor for two separate periods. His contributions to the University as a whole and to the Department of Pathology in particular have been immense, and his influence spread to the future years.

One of Professor Gibson's achievements was the negotiation of an agreement in 1970 between the University and the Hong Kong government resulting in a grant to run Hospital Pathology Service (HPS). This enabled the Department to provide high quality pathology service to a modern teaching hospital of international standing. It also enabled the University to use its expertise to enhance the quality and scope of clinical laboratory service.

Professor Gibson's other achievements included the setting up of a central electron microscope unit in the University, a new Clinical Pathology Building adjacent to the 'old' University Pathology Building in 1972, the setting up of a medical laboratory technician training program on a territory-wide basis, the development of cytology service, the setting up of Immunology Section in 1975, and a tissue typing service in 1981. He had approximately sixty publications to his credit and was the principal author of W.H.O. "blue book" on Histological Typing of Tumours of the Liver, Biliary Tract and Pancreas (1978). 1983, friends and colleagues of Emeritus Professor James Gibson established the James Gibson Fund to mark his retirement after many years of distinguished service to the University and the community. The purpose of the fund is to facilitate visits to the Department of Pathology by distinguished scholars from abroad.

Hou Pao Chang Medical Memorial Fund

Professor Hou Pao-Chang was an outstanding teacher, researcher and Head of Department of Pathology of the University of Hong Kong from 1948 - 1960. He had previously been Professor at Cheloo University and West China University and was well-respected within and outside China. His main research area was hepatobiliary disease and the relationship between the liver fluke, Clonorchis sinensis, and the development of bile duct carcinoma. During his tenure at the University of Hong Kong he oversaw the completion of a new Pathology Building in the grounds of the Queen Mary Hospital, which was completed in 1958. This new building facilitated the integration of pathology teaching with research and with a clinical pathology service for Queen Mary Hospital.

In 2007, at the 40th anniversary of Professor Hou Pao-Chang's passing, his son, Professor Laurence Hou initiated the Hou Pao-Chang Medical Memorial Fund in tribute to his late father. The Fund was jointly established by the Hou family, friends, colleagues, students, and the Department of Pathology, The University of Hong Kong, and commemorates Professor Hou Pao-Chang's life, achievements and contributions to the medical profession. The Fund facilitates visits to the Department of Pathology by distinguished scholars from abroad, and supports teaching and research in Pathology.

Program

09:00	**Opening Address** Mr Henry HL FAN Chairman, Hospital Authority, Hong Kong
09:10	**Symposium: Pancreas** **James Gibson Fund Lecture** A 'Clearer' Three-**dimensional View of Pancreatic Cancer** Professor Ralph Hruban School of Medicine Johns Hopkins University, USA **Update in management of Pancreatic Cancer** Dr Tan To Cheung Department of Surgery The University of Hong Kong
10:25	**State-of-the-Art Lecture** The Pathology of Precursor Lesions of the Pancreas Dr Elizabeth Thompson School of Medicine Johns Hopkins University, USA
10:55	Tea Break
11:15	**Symposium: Lung** **Hou PC Medical Memorial Fund Lecture** Twenty Years Progress and Future of Lung Cancer Pathology Professor Ming Sound Tsao University Health Network The University of Toronto, Canada
12:05	**Symposium: Immunology** Drug Allergy Laboratory Assays Dr Elaine Yuen Ling Au Department of Pathology Queen Mary Hospital, Hong Kong **Drug Allergy Testing: From Bench to Bedside** Dr Philip Hei Li Department of Medicine The University of Hong Kong

12:45	Lunch **Lunch Symposium sponsored by Agilent (13:00— 13:30)** Methods to Assess CPS Dr Donna Kell Agilent, USA
14:00	**Symposium: Chemical Pathology** **Therapeutic Drug Monitoring and Pharmacogenomics of Cytotoxic Drugs** Dr Eric Chun Yiu Law Department of Pathology Queen May Hospital **Next Generation Sequencing for Second Tier Testing in Newborn Screening for** Inborn Errors of Metabolism Dr Chloe Miu Mak Department of Pathology Hong Kong Children's Hospital
14:40	**Symposium: Haematology** **The Way Forward to Improve the Outcome of Acute Lymphoblastic Leukaemia** Dr Albert Chun Fung Sin Department of Pathology The University of Hong Kong Strategic Monitoring of Measurable Residual Disease (MRD) for Acute **Lymphoblastic Leukaemia** Dr Rock Yuk Yan Leung Department of Pathology Queen Mary Hospital
15:20	Tea Break
15:40	**State-of-the-Art Lecture** Early-stage Lung Cancers - **Challenges and Opportunities** Professor Ming Sound Tsao University Health Network The University of Toronto, Canada **Symposium: Lung** **A Genomic Revolution in Management of Lung Cancer** Professor Tony Shu Kam Mok Department of Clinical Oncology The Chinese University of Hong Kong
16:35	Closing

Symposium: Pancreas

Chairpersons

Professor Irene Oi Lin Ng, Department of Pathology, The University of Hong Kong
Dr Tan To Cheung, Department of Surgery, The University of Hong Kong

James Gibson Fund Lecture

A "Clearer" Three-dimensional View of Pancreatic Cancer

Professor Ralph Hruban
School of Medicine
Johns Hopkins University

Pancreatic cancer is one of the leading causes of cancer death. While many fields, such as radiology, have used three-dimensional imaging to improve our understanding of human diseases, pathology remains centered on two-dimensional microscope slides. Three advances now make three-dimensional histology possible. 1) Large fragments of human tissue can be cleared using techniques such as iDISCO. 2) Confocal and light sheet microscopy allow for the detailed visualization of three-dimensional tissues. 3) Rapid digitization of microscope slides allows for the generation of >1,000 serial microscope slides. The three-dimensional images generated are not only visually stunning, but they also help us understand the biology of this cancer type.

In this talk, we will show how clearing and three-dimensional microscopic examination of human pancreatic cancer provides novel insights into the growth patterns of pancreatic cancer. In specific, three-dimensional analysis shows that venous invasion is a distinct and almost ubiquitous feature of pancreatic cancer. This venous invasion may, in turn, explain why pancreatic cancer is so deadly.

We will also demonstrate how CODA, a new technology that can be used to automatically classify tissues, can be used to create detailed three-dimensional histologic images of pancreatic cancer at the centimeter scale. This latter approach to three-dimensional microscopy allows one to identify the exact site a cancer invades a blood vessel (the "moment of invasion"), and it allows for the integration of molecular biology techniques, creating a three-dimensional multi-omic understanding of cancer.

Surgical Management of Pancreatic Cancer— Update of Current Practise

Dr Tan To Cheung
Department of Surgery
The University of Hong Kong

Carcinoma of the pancreas is one of the leading causes of death, with 43140 new cases reported in the United States in 2010, which will lead to an estimated 36800 deaths at a five-year survival of 6%. Amongst different treatment options, surgical resection offers the best survival outcome to patients with carcinoma of the head of the pancreas. With the advancement in technology and experience sharing, the hospital mortality and morbidity for pancreaticoduodenectomy, also known as the Whipple operation, have improved when compared with the first report in 1935. However, the surgery remains a challenging operation, with hospital mortality rates ranging from 1% to 6% even at experienced centers. The issue is even more complicated if the tumor involves major vessels around the pancreatic region. The definition of borderline respectability is controversial. Although many centers have advocated resection of the tumor together with the superior mesenteric vein (SMV) or the portal vein (PV), many other centers simply do not consider operation for this group of patients after balancing the risk of surgery and predicted survival outcomes.

State-of-the-Art Lecture

Chairperson

Dr Regina Cheuk Lam Lo, Department of Pathology, The University of Hong Kong

The Pathology of Precursor Lesions of the Pancreas

Dr Elizabeth Thompson
School of Medicine
Johns Hopkins University

Our understanding of the development of neoplasia in the pancreas continues to evolve and a number of precursor lesions to invasive adenocarcinoma have been identified. These include microscopic pancreatic intraepithelial neoplasia (PanIN) and larger cystic precursors including intraductal papillary mucinous neoplasms (IPMN), mucinous cystic neoplasms (MCN), intraductal oncocytic papillary neoplasms (IOPN) and intraductal tubulopapillary neoplasms (ITPN). A number of these precursor lesions have distinctive molecular alterations. Understanding the genetics of these precursors will enhance our understanding of pancreatic adenocarcinoma as well as provide both diagnostic and potentially therapeutic opportunities. Further, predicting which precursor lesions will advance to invasive carcinoma, and when, remains a major clinical challenge, additional diagnostic insights from molecular profiling may assist in selection of patients for resection. This lecture will focus on large cystic precursor lesions with an emphasis on newly identified lesions and molecular diagnostics to enhance pre-surgical diagnosis.

Symposium: Lung

Chairpersons

Professor Annie Nga Yin Cheung, Department of Pathology, The University of Hong Kong

Hou Pao Chang Medical Memorial Fund Lecture

Twenty Years Progress and Future of Lung Cancer Pathology

Professor Ming Sound Tsao
Medicine and Pathobiology
University of Toronto

In 2021, the International Agency for Research on Cancer (IARC), in collaboration with the International Association for the Study of Lung Cancer (IASLC), the International Mesothelioma Panel (IMP) and the International Thymic Malignancy Interest Group (ITMIG) published the 5th Edition of the WHO Classification of Tumours - Thoracic Tumours. The current classification for lung cancer represents a major improvement from the 3rd Edition published in 2004, which was primarily based on tumour histo-morphology. The current classification not only incorporates the critical role of lineage-specific immunohistochemistry -based markers in the more precise classification of lung tumour diagnoses, but also provides guidelines on the diagnostic terminologies to use with cytology and small biopsy samples. The recognition that various growth patterns in adenocarcinoma are associated with survival outcome also provides evidence-based tumour subtyping, and a system for clinically meaningful tumour grading. The seminal discoveries of driver oncogenic mutations and gene fusions (e.g., EGFR, ALK, etc) and resurgence of immunotherapy have also revolutionized the importance of predictive biomarker testing in lung cancer diagnosis. This lecture will provide some historical perspective on this progress, with a discussion on the current challenges alongside personal perspectives on the future directions in lung cancer pathology.

Symposium: Immunology

Chairpersons

Professor Chak Shing Lau, Department of Medicine, The University of Hong Kong
Dr Elaine Yuen Ling Au, Department of Pathology, Queen Mary Hospital

Drug Allergy Laboratory Assays

Dr Elaine Yuen Ling Au
Department of Pathology
Queen Mary Hospital

In clinical practice, we often encounter patients labelled with drug allergy history. In standard practice, avoidance of suspected allergic items and potential cross reactive medications is advised. The implication is significant, especially for patients labelled allergic to common drugs such as penicillin or multiple items, since the labelling and restriction of drug choice is lifelong. It is well reported in literature that quite a significant portion of patients, after careful assessment, that the allergic labelling can be revised.

The gold standard for the diagnosis of drug hypersensitivity is supervised drug provocation tests (DPT). However, DPT involves re-exposing patients to suspected allergens, that can be risky. Moreover, DPT may not be feasible or indicated in every setting. Therefore, proper assessment starting with a comprehensive history taking, followed by dedicated investigations and risk stratification are important, before consideration of DPT. In general, approach to drug allergy workup can be broadly divided into immediate and delayed type reactions. Options of in-vitro tests for immediate type hypersensitivity includes specific Immunoglobulin E (SigE) and basophil activation test (BAT), while cell mediated immune response is commonly studied in delayed type hypersensitivity reaction, such as lymphocyte transformation test (LTT) and Enzyme-linked immunospot (ELISPOT) assays. Other assays, such as cytokine release measurement, HLA genotyping, etc have also been applied in the field of drug allergy diagnostic workup.

Though skin tests are important in drug allergy workup, there are settings that limit its application, for example, in patients with poor skin conditions or has difficulty to discontinue medications that interfere with skin test interpretations. Moreover, for safety concerns, intradermal test is contraindicated in patients with severe reactions such as DRESS, SJS/TEN and AGEP. Therefore, complementary use of in-vitro diagnostics helps to enhance safety and provide useful information in patient management.

Drug Allergy Testing: From Bench to Bedside

Dr Philip Hei Li
Department of Medicine
The University of Hong Kong

Drug allergy is a common problem in Hong Kong, with up to 7% of the entire population's medical records having a suspected drug allergy label. Despite this, expertise and specialist care for Immunology & Allergy remains extremely limited.

The most common drug allergy label are to penicillin or beta-lactam antibiotics. Incorrect penicillin labels are known to be associated with higher healthcare costs, as well as a myriad of negative clinical consequences – such as development of multi-drug resistant organisms and even increased patient mortality! More recently, there has also been massive public attention and fear to the potential of COVID19 vaccine associated allergies. Suspected cases of vaccine allergy have been detrimental to the COVID19 vaccine campaign. The safe delabelling of such incorrect drug allergy labels are therefore of enormous public interest.

Investigations into suspected drug allergies include both bedside in-vivo and bench in-vitro tests. Such tests are complimentary and indispensable. However, given the lack of expertise but constantly-growing Immunology Clinic queues, strategic utilization of such precious resources are needed.

In this session, the epidemiology, approach and experiences in clinical drug allergy testing will be discussed. Novel approaches to tackle the drug allergy pandemic, especially with examples with penicillin and COVID19 vaccine allergies will also be highlighted.

Symposium: Chemical Pathology

Chairpersons

Professor Ching Wan Lam, Department of Pathology, The University of Hong Kong
Professor Sidney Tam, Department of Pathology, Queen Mary Hospital

Therapeutic Drug Monitoring and Pharmacogenomics of Cytotoxic Drugs

Dr Eric Chun Yiu Law
Department of Pathology
Queen Mary Hospital

Cytotoxic drugs are widely used in the treatment of various cancers and other diseases like autoimmune inflammatory diseases, etc. They are effective but some are limited by a rather narrow therapeutic window and/or a marked inter-individual variability in their pharmacokinetic profile. Optimal therapeutic response could be difficult to achieve because of the uncertain dose-response relationship. Thus, therapeutic drug monitoring (TDM) was emerged to solve this clinical problem in around 50 years ago by measuring the circulatory drug/metabolite(s) level at defined time intervals (and at a constant concentration), and allowing clinicians to optimize the drug dosage by balancing the risk of overdose (toxicity) and risk of underdose (efficacy) accordingly.

In the era of genomic medicine, many genetic variations are now demystified with known functional effects on drug metabolism and drug responsiveness. Through pharmacogenomics approach, actionable variants could further guide a clinical decision including the choice and dosage of drugs prior to treatment (personalized medicine). This new strategy has demonstrated a promising quality improvement and patient outcome.

In this seminar, I will discuss the on ongoing efforts in combining both TDM (biochemical phenotype) and pharmacogenomics (genotype) in laboratory medicine with examples on cytotoxic drugs.

Next Generation Sequencing for Second Tier Testing in Newborn Screening for Inborn Errors of Metabolism

Dr Chloe Miu Mak
Department of Pathology
Hong Kong Children's Hospital

Application of genetic markers in newborn screening is nothing new, for example, multiplexing mutation screening for cystic fibrosis with positive immunoreactive tryspinogen results. In recent decades, there is a major paradigm shift from one-test-one-disease to one-test-multiple-diseases. Such revolutionary change has expanded newborn screening to a new horizon. Genetic and genomic tests can be applied from first tier screening, second tier testing, to confirmation follow up diagnosis. In this talk, we would discuss such applications in newborn screening setting in the background of local experience.

Symposium: Haematology

Chairpersons

Dr Edmond Shui Kwan Ma, Clinical Pathology Laboratory, HK Sanatorium & Hospital
Dr Jason Chi Chiu So, Department of Pathology, Hong Kong Children's Hospital

The Way Forward to Improve the Outcome of Acute Lymphoblastic Leukaemia

Dr Albert Chun Fung Sin
Department of Pathology
The University of Hong Kong

Acute lymphoblastic leukaemia (ALL) is an aggressive haematolymphoid malignancy. The prognosis of ALL is excellent in paediatric population. However, the outcome of adult ALL is much less favourable. The prognosis of relapse/refractory disease is dismal.

Recent advance in understanding of disease biology facilitates clinical management of patients with ALL. Ph-like ALL is recently identified subtype of B-ALL which confers poor prognosis. Various recurrent genetic aberrations have been identified in this subtype of B-ALL which are targetable by various targeted therapy available currently.

Early T-cell precursor acute lymphoblastic leukemia (ETP-ALL) is a distinct subtype of T lymphoblastic leukemia (T-ALL) identified in 2009, due to its unique immunophenotypic and genomic profile. The outcome of patients was poor in earlier studies, and they were prone to have induction failure, with more frequent relapse/refractory disease. Recent advances had been made in understanding of molecular pathogenesis of ETP-ALL. The advance in scientific research translated into improvement of clinical care for those patients.

In this session, the recent advance in understanding of disease biology will be highlighted with a brief introduction of various high-risk subtypes of ALL. The advance of therapeutic development will also be discussed. Finally, the future perspective of management of ALL will be addressed.

Strategic Monitoring of Measurable Residual Disease (MRD) forAcute Lymphoblastic Leukaemia

Dr Rock Yuk-Yan Leung
Department of Pathology
Queen Mary Hospital

Conventional strategy for assessment of treatment response in haematological malignancies heavily relies on morphological assessment but has the limitations of low sensitivity and occasionally difficulty to determine residual disease / remission status when morphological information is inconclusive. It was evident that measurement of measurable residual disease (MRD) provides a more sensitive platform to inform prognostic outcome and triage patients for haemopoietic stem cell transplantation (HSCT) as indicated by MRD results together with other clinical or genetic information. Currently, measurement of MRD by flow cytometry has become the standard practice for acute lymphoblastic leukaemia. There are multiple strategies to monitor MRD. Depending on the target level of sensitivity to be achieved, whether there was targetable genetic abnormalities amenable for molecular monitoring, technological readiness, and the availability of technical and medical expertise, different strategies may be adopted. Notwithstanding the differences in strategies, quality assurance on pre-analytical, analytical and post-analytical issues is of paramount importance to ensure accuracy of results and hence must be addressed for all selected strategies. The future of monitoring strategies for MRD is also an evolving and exciting area under active exploration and will also be discussed.

State-of-the-Art Lecture

Chairpersons

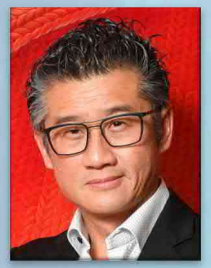
Professor Suet Yi Leung, Department of Pathology, Hong Kong Children's Hospital

Professor Ka Fai To, Department of Anatomical and Cellular Pathology, The Chinese University of Hong Kong

Early-stage Lung Cancer—Challenges and Opportunities

Professor Ming Sound Tsao
Medicine and Pathobiology
University of Toronto

Targeted therapy and immune checkpoint inhibitory (ICI) therapy have improved the survival of advanced stage/metastatic non-small cell lung cancer (NSCLC) patients. It is now standard practice to perform predictive biomarker testing in NSCLC biopsy samples, as they are essential to guide treatment decision in these patients. Similar therapeutic successes in advanced stage patients are now being studied in setting of early-stage NSCLC patients in the form of adjuvant and neoadjuvant therapies. Early success has been achieved with the 3rd generation EGFR tyrosine kinase inhibitor osimertinib, which has now become standard of care in early stage resected NSCLC patients whose tumours harbor sensitizing EGFR mutations. More recently, the US FDA recently has also approved adjuvant atezolizumab for treatment of stage II-IIIA NSCLC patients whose tumour have PD-L1 expression of >/=1% on the tumour cells. In the meantime, phase 3 trials of neoadjuvant osimertinib and neoadjuvant and other adjuvant ICIs are on-going. As adjuvant and neoadjuvant treatments are likely to become routine in the treatment of early-stage NSCLC patients, new approaches for tumour sample analyses and biomarker testing need to be considered and adopted. This lecture will discuss the current recommendations on the pathological assessment of neoadjuvantly treated NSCLCs, and the potential clinical utility of blood tests to assess minimal residual disease in the management of early-stage NSCLC patients.



A Genomic Revolution in Management of Lung Cancer

Professor Tony Shu Kam Mok
Department of Clinical Oncology
The Chinese University of Hong Kong

Lung cancer is notoriously known to be one of the most fatal malignancy in the past century. Median duration of survival was limited to less than a year for patients who presented with advanced stage disease. Only in the past decade, the genomic revolution has transformed this fatal malignancy to a chronic illness. For the first time in history, lung cancer mortality in United States has shown a declining trend. This revolution started with the discovery epidermal growth factor receptor (EGFR) mutations that happens more common in non-smokers with lung cancer. The concept of driver oncogene leads to the development of personalized medicine for advanced lung cancer. IPASS is the first randomized study confirming the superiority of EGFR tyrosine kinase inhibitor (TKI) over standard chemotherapy in patients with EGFR mutation. And at resistance, the most common mechanism is occurrence of acquired resistant mutation at exon 20 T790M. Third generation TKI, osimertinib, was developed to target T790M thus further prolongs the survival. Multiple treatments are now under development to manage the osimertinib resistance.

Anaplastic lymphoma kinase (ALK) translocation is the second most common driver oncogene. After establishment crizotinib as first line treatment for ALK positive lung cancer, much resources were devoted to development of more efficacious ALK inhibitors. Second/third generation drugs are more potent and able to penetrate the brain, and now, there are total of five approved drugs including certinib, alectinib, brigatinib, ensartinib and lorlatinib. Recent report from the ALEX study confirms the 5-year-survival rate of ALK positive lung cancer at 62.5%

Apart from EGFR and ALK mutations, a group of uncommon mutations also drive lung cancer growth. Namely, the ROS-1, BRAF V600E, RET, MET14Skipping, ERBB2 mutation, NTRK and KRAS G12C mutations are targetable and multiple FDA approved drugs are available for either first or subsequent line therapy. For such, it is crucial to perform genomic profiling in patients with advanced lung cancer and offer treatment in a personalized manner.

Note

Enquiry

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