SUPPLEMENT 5

HONG KONG MEDICAL JOURNAL 香港醫學雜誌

Volume 28 Number 5 **October 2022**

The official publication of the
Hong Kong Academy of Medicine and
the Hong Kong Medical Association

35th Annual Scientific Meeting of The Hong Kong Neurological Society

12 – 13 November 2022

第三十五屆 香港腦科學會 週年學術會議

二零二二年十一月十二日至十三日

ISSN 1024-2708

香港醫學專科學院出版社
HONG KONG ACADEMY OF MEDICINE PRESS

HONG KONG MEDICAL JOURNAL 香港醫學雜誌
Volume 28 Number 5 **October 2022**
SUPPLEMENT 5

35th Annual Scientific Meeting of The Hong Kong Neurological Society

Council of the Hong Kong Neurological Society 2022

President	Prof Thomas Wai-hong Leung 梁慧康教授
Vice President	Dr Colin Hiu-tung Lui 呂曉東醫生
Honorary Secretary	Dr Wing-keung Cheng 鄭永強醫生
Honorary Treasurer	Dr Nelson Yuk-fai Cheung 張煜暉醫生
Council Members	Dr Germaine Hiu-fai Chan 陳曉暉醫生
	Dr Carlin Chang 張嘉琳醫生
	Dr Ka-yin Cheung 張家彥醫生
	Dr Shirley Kit-yan Cheung 張潔欣醫生
	Dr Gardian Chung-yan Fong 方頌恩醫生
	Dr Herrick Siu-wah Lau 劉紹華醫生
	Dr Richard Li 李梓強醫生
	Dr Ka-lock Shiu 邵家樂醫生
	Dr Yannie Oi-yan Soo 蘇藹欣醫生
	Dr June Ho-ming Wong 黃皓明醫生
	Dr Wa-tai Wong 王華鈦醫生
Co-opt Member	Dr Noble Chung-hon Kwan 關宗漢醫生
Immediate Past President	Dr Winnie Wing-yin Wong 黃詠妍醫生
Honorary Legal Advisors	Mr Tsang-hoi Koo 顧增海律師
	Mr Eric Chiu 招健暉律師
Honorary Auditor	Li, Tang, Chen & Co 李湯陳會計師事務所

Organising Committee of the 35th Annual Scientific Meeting

Chair	Prof Thomas Wai-hong Leung 梁慧康教授
Co-Chair	Dr Colin Hiu-tung Lui 呂曉東醫生
Honorary Secretary	Dr Wing-keung Cheng 鄭永強醫生
Honorary Treasurer	Dr Nelson Yuk-fai Cheung 張煜暉醫生
Scientific Committee	Dr Germaine Hiu-fai Chan 陳曉暉醫生
	Dr Ka-yin Cheung 張家彥醫生
	Dr Shirley Kit-yan Cheung 張潔欣醫生
	Dr Gardian Chung-yan Fong 方頌恩醫生
	Dr Noble Chung-hon Kwan 關宗漢醫生
	Dr Richard Li 李梓強醫生
	Dr Ka-lock Shiu 邵家樂醫生
	Dr Yannie Oi-yan Soo 蘇藹欣醫生
	Dr June Ho-ming Wong 黃皓明醫生
	Dr Wa-tai Wong 王華鈦醫生
	Dr Winnie Wing-yin Wong 黃詠妍醫生
Publication Committee	Dr Herrick Siu-wah Lau 劉紹華醫生
	Dr Carlin Chang 張嘉琳醫生

Sponsors

AbbVie HK Ltd

Bayer

Biogen Hong Kong Ltd

Boehringer Ingelheim (HK) Ltd.

CSL Behring

DCH Auriga

Eisai

Eli Lilly

Lundbeck Hong Kong

Merck Pharmaceutical (HK) Limited

Novartis Pharmaceuticals (HK) Ltd

Otsuka Pharmaceutical (H.K.) Ltd.

Pfizer Corporation HK Ltd

Teva Pharmaceutical Industries Ltd.

UCB Pharma (HK)

Zai Lab

Scientific Programme

Venue: Grand Ballroom, Level 3, JW Marriott Hotel, Admiralty, Hong Kong SAR

12 November 2022, Saturday

09:15 – 09:30	Registration	Function Room
09:30 – 10:15	**Zai Lab Myasthenia Gravis Symposium** (Co-organised with HKSNMD) Chairpersons/Judges: *Dr June Wong, Dr Mark Cheung* **New treatment landscape in generalised myasthenia gravis—how clinical trials improve patient outcomes** *Prof James Howard*	**Poster Presentation**
10:15 – 11:00	**Neuromuscular Disease Symposium** (Co-organised with HKSNMD) Chairpersons/Judges: *Dr Sophelia Chan, Dr Gene Gao* **Next-generation sequencing needs our generation's neurologists** *Dr A Reghan Foley*	
11:00 – 11:30	Break/Air time	
11:30 – 13:00	**Dissertation Highlights** Panel Judges: *Dr Nelson Cheung, Dr WK Cheng* **Outcomes and safety of intravenous thrombolysis in older patients with acute ischaemic stroke: a multicentre retrospective matched cohort study** *Eric CH Cheung* **Clinical features and prognostic factor for outcome of posterior reversible encephalopathy syndrome: a pilot multicentre retrospective study in Hong Kong** *Dicky CL Cheung* **Functional assessment of multiple sclerosis patients in Hong Kong** *CY Chow* **Clinical significance and prognostic value of vertebrobasilar dolichoectasia in Fabry disease** *Tiffany YL Lam* **Low-density lipoprotein cholesterol control and role of PCSK9 inhibitors in secondary stroke prevention in patients with transient ischaemic attack and ischaemic stroke** *Ian YH Leung* **Validation of APE2 score as predictive model for autoimmune encephalitis-related antibodies in Hong Kong: a multicentre retrospective study** *Charing CL Szeto* **Internal carotid artery and vertebral artery dissection: stroke prognosis and predictors of outcome** *LY Wong* **Clinical features and treatment outcomes of tuberculous meningitis: the experience in three hospitals from 2010 to 2020** *SW Yu*	
13:00 – 13:15	**Opening Ceremony** (Guest of Honour: *Prof CM Lo, BBS, JP, Secretary for Health)*	
13:15 – 13:30	Break/Air time	
13:30 – 14:15	**Novartis Migraine Symposium** Chairpersons: *Dr KY Cheung, Dr Carlin Chang* **Understanding anti-calcitonin gene-related peptide: optimal treatment duration and practical tips on differentiating treatment options** *Prof Andreas Gantenbein*	

12 November 2022, Saturday

14:15 – 15:00	**Teva Migraine Symposium** Chairpersons: *Dr KY Cheung, Dr Carlin Chang* **The real world experience with CGRP monoclonal antibody therapies** *Dr Bronwyn Jenkins*	Function Room **Poster Presentation**
15:00 – 15:15	Break/Air time	
15:15 – 15:40	**Boehringer Ingelheim Stroke Symposium** (Co-organised with HKSS) Chairpersons: *Dr Richard Li, Dr Yannie Soo* **Optimising atrial fibrillation management after stroke: evidence and experience** *Dr Bonaventure Ip*	
15:40 – 16:00	**Stroke Symposium** Chairpersons: *Dr Richard Li, Dr Yannie Soo* **Tenecteplase for stroke—the why, the when and the how** *Dr Joyce Lo*	
16:00 – 16:45	**Free Paper Presentation** Free Paper Panel Judges: *Dr Winnie Wong, Dr Richard Li* **Prevalence and long-term prognostic implications of depression in stroke survivors** *Kason WH Lin* **Fibrinogen concentrates for thrombolysis-related haemorrhages in ischaemic stroke patients** *Joyce Lo* **Accuracy of Face, Arm, Speech and Eyes score in detecting large vessel occlusion stroke in pre-hospital setting** *SH Ma* **What do elderlies think about stroke thrombectomy? Assessment of elderlies and carers' opinions through best-case and worst-case scenario approach** *Karen G Poon* **Sex differences in association between gut microbiome and essential hypertension based on ambulatory blood pressure monitoring** *PD Virwani* **Poster Presentation** Poster Panel Judges: *Dr Shirley Cheung, Dr Carlin Chang* **Neuro-Behçet's disease: a young stroke mimic** *Tommy J Tang* **Whole blood transcriptomic analysis in Parkinson's disease in Chinese—a pilot study** *Phillip Chan* **Bilateral anterior cerebral artery territory ischaemic stroke presented as akinetic mutism** *Phillip TC Pang*	

13 November 2022, Sunday

		Function Room
09:15 – 09:30	Registration	
09:30 – 11:00	**Movement Disorder Symposium** Chairpersons: *Dr Germaine Chan, Dr Nelson Cheung* **Magnetic resonance imaging–guided focused ultrasound treatment for movement disorders** *Prof Binit Shah* **Human functional connectome for deep brain stimulation in movement disorders** *Prof Andreas Horn*	**Poster Presentation**
11:00 – 11:10	Break/Air time	
11:10 – 11:55	**UCB Epilepsy Symposium** Chairpersons: *Dr Gardian Fong, Dr Noble Kwan* **Comorbidities matter: what we can do to find the most suitable antiepileptic drug treatment for patients with epilepsies** *Prof Steve Chung*	
11:55 – 12:40	**Epilepsy Symposium** Chairpersons: *Dr Gardian Fong, Dr Noble Kwan* **Thrombolysis-related post-stroke epilepsy** *Prof Ziyi Chen*	
12:40 – 12:50	Break/Air time	
12:50 – 13:35	**Bayer Stroke Symposium** (Co-organised with HKSS) Chairperson: *Dr SH Li* **Stroke prevention and contemporary vascular disease treatment strategies** *Dr Robert Welsh*	
13:35 – 13:45	Break/Air time	
13:45 – 14:30	**Lundbeck Parkinson's Disease Symposium** Chairperson: *Dr Herrick Lau* **Current trends in the diagnosis and management of Parkinson's disease** *Prof Werner Poewe*	
14:30 – 15:15	**Novartis Multiple Sclerosis Symposium** Chairpersons: *Dr KL Shiu, Dr WT Wong* **Cognitive impairment of multiple sclerosis patients and how Siponimod helps in improving cognitive outcome in secondary progressive multiple sclerosis** *Prof Ralf Gold*	
15:15 – 16:00	**Neuroimmunology Symposium** Chairpersons: *Dr Stephen Cheng, Dr Jessica Li* **Clinical features and immunology underlying autoantibody-mediated diseases** *Prof Sarosh R Irani*	
16:00 – 16:15	Closing Ceremony	

S 1

Zai Lab Myasthenia Gravis Symposium

New treatment landscape in generalised myasthenia gravis—how clinical trials improve patient outcomes

James Howard
Department of Neurology, Chapel Hill School of Medicine, The University of North Carolina, USA

Myasthenia gravis (MG), a chronic autoimmune disease mediated by an antibody attack to the neuromuscular junction, is characterised by fluctuating muscle weakness and exertional fatigability. Standard immunotherapy may fail to achieve sufficient improvement with minimal symptom expression or remission of myasthenic symptoms, despite adequate dosing and duration of treatment. Treatment-resistant MG poses a challenge for both patients and treating neurologists and requires new therapeutic approaches. The spectrum of upcoming immunotherapies that more specifically address distinct targets of the main immunological players in MG pathogenesis includes monoclonal antibodies directed against key B-cell molecules, as well as monoclonal antibodies against the fragment crystallisable neonatal receptor and also drugs that inhibit distinct elements of the complement system activated by the pathogenic MG antibodies. In this presentation, Prof Howard gives an overview on new therapeutics being evaluated in still ongoing or recently finished controlled clinical trials. Also, the challenges associated with the new therapeutic options are discussed briefly.

S 2

Neuromuscular Disease Symposium

Next-generation sequencing needs our generation's neurologists

A Reghan Foley
Neuromuscular and Neurogenetic Disorders of Childhood Section, Neurogenetics Branch, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland, USA

The availability of next-generation sequencing (NGS) has transformed the practice of medicine, including neurology. NGS allows for a large number of genes to be sequenced in parallel, thus facilitating the process of sequencing multiple genes of interest. Deep phenotyping and a hierarchical differential diagnosis are essential when selecting the genetic testing methodology appropriate for individual patients. It is also important to recognise those conditions for which NGS sequencing is unable to identify the pathogenic genetic cause. Notably, this is the case for the most common genetic neuromuscular disorders, including trinucleotide repeat expansions (myotonic dystrophy, Friedreich ataxia), deletions, duplications, or, in particular, 'copy number neutral' inversions of multiple exons, deletions situated in highly similar duplicated genomic regions (spinal muscular atrophy) and contractions or duplications of genomic regions (facioscapulohumeral muscular dystrophy and Charcot-Marie-Tooth disease type 1A). For those neuromuscular conditions for which there are therapies which may ameliorate symptoms, such as the congenital myasthenic syndromes, it is essential that these diagnoses be considered, and the relevant genes be included in NGS panel testing performed. As important as making a genetic diagnosis is knowing when you do not have a genetic diagnosis, especially when faced with the numerous genetic variants of uncertain significance which often result from NGS panel testing. The neurologists' clinical impression continues to be essential, especially since NGS has limitations in uncovering particular causative variants, such as deep intronic variants, for example. Furthermore, there are non-genetic conditions which may mimic genetic neuromuscular conditions for which there may be treatment implications and thus must be considered. This talk will highlight how the astute clinical eye of neurologists remains essential in the age of NGS. The role of muscle ultrasound in the diagnostic evaluation of neuromuscular patients and the interpretation of NGS results will also be discussed.

DH 1

Outcomes and safety of intravenous thrombolysis in older patients with acute ischaemic stroke: a multicentre retrospective matched cohort study

Eric CH Cheung
Department of Medicine and Geriatrics, Princess Margaret Hospital, Hong Kong SAR

Background: Intravenous thrombolysis (IVT) is the mainstay of treatment in acute ischaemic stroke, but patients aged above 80 were under-represented or excluded from landmark trials. Use of IVT in these patients may raise concern about limited benefit and more complications. Local comparative data are lacking.
Methods: This is a multicentre retrospective matched cohort study on patients receiving IVT at three hospitals, from January 2016 to August 2021. Patients were divided into three groups: >85-year-old, 81-85-year-old, and ≤80-year-old, with individual matching in 1:1:1 ratio in terms of gender and baseline National Institute of Health Stroke Scale score category.
Results: A total of 351 patients were included for analysis (117 in each group), with mean ages of 90.0±3.6 years, 83.1±1.4 years, and 67.4±10.8, respectively. Baseline characteristics were comparable except that more patients in the older groups had atrial fibrillation, antiplatelet therapy, and poorer premorbid function. All groups had similar probability of achieving stroke severity reduction at 24 hours. The older groups were less likely to achieve independent outcome (modified Rankin scale 0-2) and more likely to die by 90 days. The likelihood of symptomatic intracranial haemorrhage was similar between groups.
Conclusion: Patients aged above 80 had similar chances of early neurological improvement after IVT but were less likely to remain alive and independent by 90 days. However, the risk of symptomatic intracranial haemorrhage was not increased. Age alone should not preclude them from treatment. Our findings can serve as reference when recommending IVT to older patients.

DH 2

Clinical features and prognostic factor for outcome of posterior reversible encephalopathy syndrome (PRES): a pilot multicentre retrospective study in Hong Kong

Dicky CL Cheung, Colin HT Lui
Department of Medicine, Tseung Kwan O Hospital, Hong Kong SAR

Background: Posterior reversible encephalopathy syndrome (PRES) is a rare but important disease entity that needs to be recognised promptly due to its reversibility with correct clinical management of removing triggering factors. Majority of the studies of PRES are from western countries and there is little clinical series from Asian countries or regions for clinical characterisation and outcome measurement.
Objective: To characterise clinical features and outcomes of patients with PRES and identify any prognostic factors.
Methods: Patients with diagnosis of PRES admitted between 1 January 2006 and 31 December 2020 were identified retrospectively from Queen Elizabeth Hospital and Tseung Kwan O Hospital. Patient records were independently reviewed by a neurologist and a neuroradiologist for ascertaining the diagnosis. Comprehensive review of patient demographics, predisposing medical conditions and factors, triggering factors, clinical features, radiological features, medication management, and clinical outcome assessed by modified Rankin scale (mRS) was performed. Statistical analysis was performed to look for associations between clinical subgroups and radiological features. Univariate analysis and multivariate analysis with logistic regression were performed to look for factors associated with unfavourable clinical outcomes.
Results: 49 patients with 50 episodes of PRES were included in the study. The mean age was 46 years (standard deviation [SD]=16 years), 58% are female. Mean peak systolic blood pressure was 199 mm Hg (SD=30 mm Hg) and mean peak diastolic blood pressure was 117 mm Hg (SD=23 mm Hg). Acute triggering factors included hypertension (88%), sepsis (30%), new immunosuppressive drugs/chemotherapy (14%), and eclampsia/preeclampsia (12%). Chronic predisposing conditions included hypertension (40%), chronic kidney disease (40%), autoimmune disease (30%), and long-term immunosuppressive drugs (20%). Clinical presentations included seizure (n=33, 66%), altered mental status (n=24, 48%), headache (n=15, 30%), and visual impairment (n=13, 26%). Status epilepticus was rare (n=2, 4%) but a possible presentation. Classical parietal-occipital region involvement in imaging is most commonly found (n=42, 84%), followed by frontal lobe (n=15, 30%), cerebellum (n=10, 20%), and brainstem (n=9, 18%). Majority had favourable clinical outcome (mRS <3, n=35, 70%). Patients with sepsis are more likely to have frontal lobe involvement (P<0.001). Patient with sepsis was associated with unfavourable clinical outcome as defined by mRS (odds ratio=9.4; 95% confidence interval=1.01-87.4; P=0.049).
Conclusions: Clinical features and outcomes are comparable to other regions in the world. Sepsis is a statistically significant risk factor for unfavourable clinical outcome. Further larger-scale studies are necessary to determine and clarify clinical subgroups who are at risk of unfavourable prognosis.

DH 3

Functional assessment of multiple sclerosis patients in Hong Kong

CY Chow
Pamela Youde Nethersole Eastern Hospital, Hong Kong SAR

Introduction: Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system (CNS), characterised by multiple neurological disabilities. Expanded Disability Status Scale (EDSS) is the gold standard test in evaluation of MS patients' functional status. However, it is not sensitive nor specific. Other functional assessment tools, including the Timed 25-Foot Walk (T25FW), Symbol Digit Modalities Test (SDMT), Nine-Hole Peg Test (9HPT), Modified Fatigue Impact Scale (MFIS) and 36-Item Short Form Health Survey (SF-36), are increasingly being used.

Objective: This study was conducted to correlate functional assessment tools other than EDSS with demographical, clinical and radiological features of MS patients in Hong Kong, and to establish their significance in future MS patients' care.

Methods: MS patients who were actively followed up at Pamela Youde Nethersole Eastern Hospital were enrolled. The clinical characteristics of the patients were retrieved from electronic patient records. All patients underwent the five clinical assessment tools as listed above. Comparison of the assessment scores with patients' demographic, clinical and radiological features was done by different analytical methods. Linear regression models were used to predict the degree of association.

Results: A total of 44 subjects were included in this study. For T25FW test, which assessed lower limb function, subjects with cerebellar (P=0.03) and brainstem (P=0.02) involvement on magnetic resonance imaging (MRI) of brain performed significantly worse. For SDMT, which assessed cognitive function, subjects with visual impairment (P=0.02), cerebellar (P=0.04) and brainstem (P=0.02) involvement on MRI brain attained significantly lower scores. For 9HPT, which assessed upper limb function, subjects with depression (P=0.01), cerebellar (P=0.03) and brainstem (P=0.04) involvement on MRI brain achieved lower percentiles. No significant association was found between the scores in the MFIS and the subjects' clinical or radiological features. Subjects with sphincter dysfunction had significantly lower physical (P=0.01) and mental component summary (P=0.04) scores in SF-36. Subjects with depression had significantly lower mental component summary scores (P=0.01). EDSS failed to demonstrate significant association with depression (P=0.25) and brainstem (P=0.10) involvement on MRI brain.

Conclusion: T25FW, SDMT, 9HPT and SF-36 correlated well with many clinical and radiological features of MS patients. We advocate the adoption of additional functional assessment tools other than EDSS in disease monitoring which may potentially be useful to detect subtle clinical progression which warrant early escalation of treatment.

DH 4

Clinical significance and prognostic value of vertebrobasilar dolichoectasia in Fabry disease

Tiffany YL Lam
Department of Medicine and Geriatrics, Princess Margaret Hospital, Hong Kong SAR

Background: Fabry disease (FD) is an inherited X-linked lysosomal storage disease resulting from mutations of α-galactosidase A gene, and has been emphasised as one of the aetiologies of young stroke and leukoencephalopathy. Vertebrobasilar dolichoectasia is a highlighted characteristic finding in FD. In this study, we aimed to compare the differences in basilar artery (BA) diameter of FD patients against age-matched controls with and without stroke among the Chinese population.
Methods: This was a matched case-control study involving 37 FD patients in Hong Kong who were referred to Princess Margaret Hospital. The BA diameters were measured on axial T2-weighted magnetic resonance imaging and compared to two age-and-gender matched control groups, one with stroke and one without. The association between BA diameter and stroke occurrences and white matter hyperintensities (WMH) were analysed among all FD patients.
Results: Patients with FD had significantly increased BA diameter compared to controls with and without stroke (P<0.001). A BA diameter of 4.16 mm could distinguish FD from controls in the stroke subgroup (ROC AUC 0.870, P=0.001, sensitivity 80%, specificity 100%), and with a cut-off of 3.21 mm in the non-stroke subgroup (ROC AUC 0.846, P<0.001, sensitivity 77.8%, specificity 88.9%). Larger BA diameter had higher stroke occurrences and was moderately associated with heavier WMH load in terms of higher total Fazekas scores (Spearman's rank correlation=0.423, P=0.011).
Conclusion: Vertebrobasilar dolichoectasia was also present in Chinese FD patients. BA diameter was an easily obtainable tool with high diagnostic utility in identifying FD from a mixed cohort of stroke and normal controls and carried predictive value in evaluating neurological outcome of FD.

DH 5

Low-density lipoprotein cholesterol control and role of PCSK9 inhibitors in secondary stroke prevention in patients with transient ischaemic attack and ischaemic stroke

Ian YH Leung
Neurology and Internal Medicine, Queen Mary Hospital, Hong Kong SAR

Background: In transient ischaemic attack (TIA)/ischaemic stroke patients with atherosclerosis, current guidelines recommend reducing low-density lipoprotein cholesterol (LDL-C) to <1.8 mmol/L. In the contemporary era with presumed frequent use of moderate-high dose statins, we studied the LDL-C control of TIA/ischaemic stroke patients and determined the potential role of PCSK9 inhibitors (PCSK9i).
Methods: We prospectively followed up consecutive TIA/ischaemic stroke patients who were admitted to the Acute Stroke Units of Queen Mary Hospital and Princess Margaret Hospital, Hong Kong during January 2019 to June 2020. Lipid-lowering drug use on discharge, serial post-event LDL-C measurements, statin-related adverse events and major adverse cardiovascular events (MACE) were documented.
Results: 1014 TIA/ischaemic stroke patients (mean age 71 ± 14, 54% men) were followed up for a mean 1.7 ± 0.8 years. On discharge, 87% were prescribed statins (72% moderate-intensity, 12% high-intensity), 2% ezetimibe and none with PCSK9i. The mean LDL-C reduction with low-, moderate- and high-intensity statins was 36%, 46% and 59%, respectively. Statin-related adverse events were rare (<1%). Patients who achieved an LDL-C <1.8 mmol/L during follow-up were at significantly lower risk of all-cause mortality (age- and sex-adjusted subdistribution hazard ratio=2.22 [95% confidence interval=1.26-3.93]), but were not at a lower risk of MACE. Of the 47/249 (19%) patients with TIA/ischaemic stroke with atherosclerosis who did not achieve an LDL-C <1.8 mmol/L, only 12 (26%) received high-intensity statins, 3 (6%) received ezetimibe and none received PCSK9i during follow-up.
Conclusion: One in five TIA/ischaemic stroke patients with atherosclerosis did not reach a target LDL-C <1.8 mmol/L. Use of high-intensity statins and ezetimibe should first be encouraged in this population.

DH 6

Validation of APE2 score as predictive model for autoimmune encephalitis-related antibodies in Hong Kong: a multicentre retrospective study

Charing CL Szeto
The Hong Kong Neurological Society, Hong Kong SAR

Background: Autoimmune encephalitis (AE) is a debilitating disease that can cause severe neurological deficit and mortality. While diagnosis of AE is often easily missed or delayed, there is growing concern of low threshold for testing for neural-specific antibodies which potentially cause more diagnostic dilemma. More guidance is needed for the precise and speedy diagnosis of the disease. In this study, we aimed to validate the Antibody Prevalence in Epilepsy and Encephalopathy (APE2) score in predicting positivity in anti-neural antibodies score in Hong Kong.
Methods: We had retrospectively collected data from patients with clinical suspicion of AE and sent serology and/or cerebrospinal fluid for anti-N-methyl-D-aspartate receptor antibody testing from 3 hospitals in Hong Kong between 2015 and 2020. The results of other neural-specific antibodies were traced. Their clinical presentation, radiological, laboratory results and outcome were evaluated. Their APE2 scores were retrospectively calculated and validated.
Results: We had reviewed 336 patients' data. Among the 313 patients who presented with epilepsy or neuropsychiatric symptoms, 15 (4.8%) had true positive neural-specific antibody result. Median APE2 score of the positive cases was 6 (range, 2-8), while that of negative results was 3 (range, 0-10; $P \leq 0.001$). The receiver operating characteristic area under the curve of APE2 score was 0.806. APE2 score with a cut-off of 4 could predict neural-specific antibody with a sensitivity of 76.6% and specificity of 71.4%.
Conclusions: In Chinese adult patients with epilepsy or neuropsychiatric symptoms, APE2 score can predict neural-specific antibody positivity and guide our clinical decision in antibody testing.

DH 7

Internal carotid artery and vertebral artery dissection: stroke prognosis and predictors of outcome

LY Wong
Department of Medicine, North District Hospital, Hong Kong SAR

Background: Cervico-cerebral artery dissection is an important aetiology of stroke, especially in the younger population. However, studies in our locality are limited. The aim of this study was to review stroke cases related to internal carotid artery and vertebral artery dissection to explore any differences between these 2 groups of patients, and to identify any factors which can guide us to predict favourable clinical outcomes.
Methods: This was a retrospective cohort study. Patients were recruited from 4 regional hospitals, including North District Hospital, Alice Ho Miu Ling Nethersole Hospital, Prince of Wales Hospital and United Christian Hospital, from the period of 1 January 2010 to 30 April 2021 for analysis.
Results: Total 86 patients were included in this study, in which 26 patients (30.2%) had internal carotid artery dissection and 60 patients (69.8%) had vertebral artery dissection. Stroke prognosis at 3-month and 6-month follow-up was favourable in general. At 3 months, 65.2% and 81.1% of patients in the internal carotid artery dissection group and the vertebral artery dissection group respectively had favourable clinical outcome, with modified Rankin Scale score of 0-2. At 6 months, 63.6% and 86.5% of patients in the internal carotid artery dissection group and the vertebral artery dissection group respectively had favourable clinical outcome ($P=0.025$). Re-stroke or mortality was not common in current study. Lower National Institutes of Health Stroke Scale (NIHSS) score was the only predictor of favourable clinical outcome at 3 months and at 6 months.
Conclusion: In this study, stroke patients with internal carotid artery or vertebral artery dissection enjoyed good prognosis, low re-stroke rate and low mortality rate. Lower NIHSS score was the only predictor of favourable clinical outcome.

DH 8

Clinical features and treatment outcomes of tuberculous meningitis: the experience in three hospitals from 2010 to 2020

SW Yu
Department of Medicine and Geriatrics, Caritas Medical Centre, Hong Kong SAR

Background: Tuberculous meningitis (TBM) is a diagnostic challenge and is uniformly fatal if untreated. Even when treatment has been started, there is still significant morbidity and mortality. An update on the latest local situation is due.

Methods: This was a retrospective cohort study of adults diagnosed with TBM from 1 January 2010 to 31 December 2020 in Caritas Medical Centre, Princess Margaret Hospital, and Queen Elizabeth Hospital. Patients' clinical characteristics, disease complications, treatment regimens, complications related to treatment, and outcomes at 1 year were examined.

Results: A total of 100 patients were recruited. 50% of patients had microbiologically confirmed TBM. The mean time to initiation of treatment was 6.5 days. Older age was associated with a longer time to initiation of treatment. 46% of patients reached the primary outcome of either death due to TBM and its complications (21%) or poor neurological recovery (modified Rankin Scale 3-5) [25%]. There was full recovery in 46% of patients. 47% of patients had adverse drug reactions requiring adjustment of anti-tuberculous agents, 10% of patients had infections related to corticosteroids, and 21% of patients developed paradoxical reactions.

Conclusion: Our study found that patients with TBM in Hong Kong were older and presented at an earlier stage, with almost half of cases resulting in death or disability. Further studies on better diagnostic methods and the optimal TBM treatment regimen are needed. In the meantime, a high index of suspicion and earlier initiation of treatment can help reduce morbidity and mortality.

S 3

Novartis Migraine Symposium

Understanding anti-calcitonin gene-related peptide: optimal treatment duration and practical tips on differentiating treatment options

Andreas Gantenbein
Headache Group of Peter Goadsby at Queen Square, London

As Switzerland was one of the first countries where erenumab was available and all four monoclonal antibodies are available by now, Prof Gantenbein will share data from clinical studies and his real-world experience in treating patients with this new specific anti-migraine therapy. A special focus will be put on treatment duration and patient-centred outcomes.

S 4

Teva Migraine Symposium

The real world experience with CGRP monoclonal antibody therapies

Bronwyn Jenkins
Consultant Neurologist, The Epping Clinic, Australia

No abstract available.

S 5

Boehringer Ingelheim Stroke Symposium
Optimising atrial fibrillation management after stroke: evidence and experience

Bonaventure Ip
Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Hong Kong SAR

Up to 13% of acute ischaemic stroke patients received anticoagulation prior to stroke onset (IS-DOAC). IS-DOAC represents a major clinical challenge due to the uncertainties in the optimal prevention and treatment strategies. In this lecture, we shall focus on the effect of inappropriate DOAC dosing and modifiable risk factors on IS-DOAC. Furthermore, acute and long-term management of IS-DOAC will also be discussed.

S 6

Stroke Symposium
Tenecteplase for stroke—the why, the when and the how

Joyce Lo
Department of Neurology, Queen Elizabeth Hospital, Hong Kong SAR

The use of intravenous tenecteplase (TNK) as a thrombolytic agent for acute ischaemic stroke has been investigated in studies with encouraging results, especially for large artery occlusions. TNK is included as an alternative to alteplase in stroke guidelines. In this talk, we will discuss the why (potential benefits of TNK), the when (discussing on the key TNK trials), and the how (share our local experience in using TNK in our stroke service).

FP 1

Prevalence and long-term prognostic implications of depression in stroke survivors

Kason WH Lin[1], Clio YM Cheng[2], YK Wong[3], Vivian W Lou[2,4], KK Lau[3]
[1] Department of Medicine, School of Clinical Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR
[2] Sau Po Centre on Ageing, The University of Hong Kong, Hong Kong SAR
[3] Division of Neurology, Department of Medicine, Queen Mary Hospital, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR
[4] Department of Social Work and Social Administration, The University of Hong Kong, Hong Kong SAR

Background: Recent estimates of the prevalence of post-stroke depression (PSD) and also its consequences are lacking. We aimed to determine the burden and long-term prognostic implications of PSD in Hong Kong.
Methods: We prospectively followed up 188 stroke patients recruited from three non-governmental organisations in Hong Kong during the period January 2017 to April 2019. Details of patients' clinical and sociodemographic characteristics were collected. All subjects received a Patient Health Questionnaire-9 (PHQ-9) to evaluate their symptoms and severity of depression. Clinical outcomes on follow-up included recurrent stroke and major adverse cardiovascular events (MACE).
Results: The mean age of the study population was 67±14 years (49% men, 72% ischaemic stroke). In the 139 out of 188 patients who completed a PHQ-9 assessment, the mean PHQ-9 score was 7.7±6.0. 66% of stroke patients had depressive symptoms (PHQ-9 score >4), whilst 30% had moderate-severe depression (PHQ-9 score ≥10). Underlying dementia, a lower modified Barthel Index and poor functional recovery were predictors of moderate-severe PSD after age and sex adjustment (all $P<0.05$). During a mean follow-up of 43.1±17.7 months after index stroke, 19% developed a MACE, 9% had recurrent stroke and 16% died. Worsening depressive symptoms was an independent predictor of recurrent stroke (mild depression: hazard ratio [HR]=2.68, 95% confidence interval [CI]=0.29-24.79; moderate-severe depression: HR=6.31, 95% CI=0.76-56.65, $P_{trend}=0.049$) and was associated with MACE with borderline significance ($P_{trend}=0.050$).
Conclusion: The prevalence of PSD remains to be very high in Hong Kong and is associated with adverse clinical consequences. Better strategies to detect and manage PSD are warranted.

FP 2

Fibrinogen concentrates for thrombolysis-related haemorrhages in ischaemic stroke patients

Joyce Lo
Department of Neurology, Queen Elizabeth Hospital, Hong Kong SAR

Background: Stroke guidelines have suggested fibrinogen repletion by cryoprecipitate for thrombolysis-related symptomatic intracranial haemorrhages. During COVID, there was a shortage of blood products. Fibrinogen concentrates is a product which can be given quickly without cross match or thawing. It has been used to treat trauma and surgical patients, and its use has been reported for stroke patients. Since July 2000, our hospital has been using fibrinogen concentrates instead of cryoprecipitate for thrombolysis-related bleeding complications.
Methods: This is a retrospective review of our ischaemic stroke patients given fibrinogen concentrates from 1 July 2000 to 31 August 2022 for thrombolysis-related haemorrhages. Safety outcomes (primarily thrombotic complications) and clinical outcomes (primarily haematoma expansion) were studied.
Results: Out of the 436 ischaemic stroke patients given thrombolytic agents during the study period, 34 received fibrinogen concentrates for intracranial or non-intracranial bleeding. None had thrombotic complications. Twelve patients received fibrinogen concentrates for symptomatic intracranial haemorrhage, two out of the seven patients (28.5%) with follow-up imaging had haematoma expansion. There was no haematoma expansion in the asymptomatic haemorrhage patients. Patients with non-intracranial bleeding achieved haemostasis satisfactorily.
Conclusions: Our study suggests fibrinogen concentrates is a safe treatment for thrombolysis-associated bleeding. It can be a feasible alternative to cryoprecipitate, due to its ready availability and convenience of use. More data with larger sample size would be needed to investigate on its clinical efficacy compared to other fibrinogen repleting options.

FP 3

Accuracy of Face, Arm, Speech and Eyes score in detecting large vessel occlusion stroke in pre-hospital setting

SH Ma
Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Hong Kong SAR

Background and purpose: We aimed to investigate the accuracy of Face, Arm, Speech and Eyes (FASE) score in predicting large vessel occlusion (LVO) ischaemic stroke.
Methods: FASE score is performed by trained emergency medical service (EMS) personnel in patients with suspected ischaemic stroke. Designed for early LVO detection, FASE score is composed of 4 items: Facial palsy (scored 0 or 1), Arm or leg motor function (scored 0 or 2), Speech abnormality (score 0 or 2) and abnormal Eye movement with gaze preference (scored 0 or 2), adding up to a score of 0 to 7. Data were collected prospectively including the final diagnosis, imaging result and presence of LVO. LVO was defined by occlusion of intracranial internal carotid artery, middle cerebral artery (MCA)-M1, M2 and basilar arteries on computed tomography angiogram or development of established infarct involving more than 2/3 of MCA territories on interval brain imaging performed within 48 hours from onset. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were analysed to evaluate FASE score's predictive value for LVO.
Results: From August 2021 to August 2022, there were total 184 patients with suspected ischaemic stroke who underwent pre-hospital stroke assessment by EMS. Among the 184 patients, 66.3% (n=122) were diagnosed with ischaemic stroke. LVO was detected in 15.7% (n=26). FASE score was graded and reported in 155 patients. FASE scores cut-off at 5 or above best predict the presence of LVO with sensitivity of 0.75, specificity 0.55, PPV 0.24 and NPV 0.92 versus FASE score ≥4 of 0.92, 0.32, 0.20 and 0.95 and FASE score ≥6 of 0.25, 0.88, 0.29 and 0.88, respectively.
Conclusions: FASE score with cut-off at 5 or above has a high sensitivity but relatively low specificity in LVO detection. More effort needs to be taken in improving the accuracy in LVO detection in pre-hospital setting.

FP 4

What do elderlies think about stroke thrombectomy? Assessment of elderlies and carers' opinions through best-case and worst-case scenario approach

Karen G Poon, Anderson CO Tsang, Peter CC Lam
Department of Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR

Background: The study aimed to understand elderlies and their carers' decision-making process regarding treatment of large vessel obstruction (LVO) stroke.
Methods: Patients over 65 years old from a medical outpatient clinic and their carers were interviewed and presented with a hypothetical scenario of a LVO stroke. The prognoses of two treatment approaches (thrombectomy and medical treatment only) were explained with the best-case and worst-case scenarios based on patients' age and co-morbidities. Their preferred treatment option, deciding factors and acceptable outcome were analysed.
Results: There were 202 participants in total. Among 89 patients interviewed, 38 were >80 years old and 51 were aged 65-80. Their median baseline was modified Rankin scale (mRS) score 2. In all, 35% of patients would opt for thrombectomy, while the rest would opt for medical treatment. The carer group showed similar results when acting as surrogate decision maker. A larger portion of carers and patients over the age of 80 would opt for medical therapy than those aged 65-80. The most common reason for choosing medical therapy is the worry of interventional complications. The most common reason for choosing thrombectomy is the better functional outcome for intervention group. Out of the 86 pairs of patients and carers, only 73% carers would make the same treatment choice as their respective patients when acting as surrogate decisionmakers. 54% of patients and 60% of carers considered an mRS score of 4 to be an acceptable outcome. The majority of both carers (71%) and patients (75%) considered ≥75% to be an acceptable percentage to achieve their expected mRS score.
Conclusion: Two-thirds of elderly patients and 80% of >80-year-olds would opt for medical therapy over thrombectomy in a hypothetical LVO situation, despite the better outcome of thrombectomy in the medical literature. A substantial portion of elderly patient-carer pairs had divergent treatment choice and expected outcome score.

FP 5

Sex differences in association between gut microbiome and essential hypertension based on ambulatory blood pressure monitoring

PD Virwani[1#], Gordon Qian[2,3#], Matthew SS Hsu[1], Tommy KKTS Pijarnvanit[1], Carman NM Cheung[1], YH Chow[1], LK Tang[1], YH Tse[1], JW Xian[1], Shirley SW Lam[1], Crystal PL Lee[1], Chelsea CW Lo[1], Roxanna KC Liu[1], TL Ho[1], BY Chow[1], KS Leung[4], HW Tsang[5], Emily KK Lo[4], Keith TS Tung[5], SK Chung[6-9], MF Yuen[1], SY Leung[10-12], Patrick Ip[5], Ivan FN Hung[1], Jimmy CY Louie[4], Hani El-Nezami[4,13], Joshua WK Ho[2,3,11,12], KK Lau[1,14]

[1] Department of Medicine, School of Clinical Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR
[2] School of Biomedical Sciences, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR
[3] Laboratory of Data Discovery for Health Limited, Hong Kong Science Park, Hong Kong SAR
[4] School of Biological Sciences, Faculty of Science, The University of Hong Kong, Hong Kong SAR
[5] Department of Paediatrics and Adolescent Medicine, School of Clinical Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR
[6] Faculty of Medicine, Macau University of Science and Technology, Macau SAR
[7] Dr. Neher's Biophysics Laboratory for Innovative Drug Discovery, Macau University of Science and Technology, Macau SAR
[8] State Key Laboratory of Quality Research in Chinese Medicine, Macau University of Science and Technology, Macau SAR
[9] State Key Laboratory of Pharmaceutical Biotechnology, The University of Hong Kong, Hong Kong SAR
[10] Department of Pathology, School of Clinical Medicine, The University of Hong Kong, Queen Mary Hospital, Hong Kong SAR
[11] The Jockey Club Centre for Clinical Innovation and Discovery, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR
[12] Centre for PanorOmic Sciences, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR
[13] Institute of Public Health and Clinical Nutrition, University of Eastern Finland, Kuopio 70211, Finland
[14] State Key Laboratory of Brain and Cognitive Sciences, The University of Hong Kong, Hong Kong SAR
[#] PD Virwani and Gordon Qian contributed equally to this work.

Background: Sex differences in the pathogenesis of hypertension exist. Whilst gut microbiota (GM) dysbiosis is a novel risk factor of hypertension, the potential sex differences in associations between GM and 24-hour ambulatory blood pressure (BP) remain to be investigated.

Methods: We recruited 241 asymptomatic Hong Kong Chinese (113 males, 128 females, mean age=54±6 years), who were not on anti-hypertensive agents. Shotgun metagenomic sequencing, 24-hour ambulatory BP monitoring, and short-chain fatty acid (SCFA) measurements in the stool and plasma were performed. Statistical analysis was conducted under covariate-adjusted models including age, sex, body mass index, smoking, sodium intake, menopause and fatty liver status.

Results: Based on 24-hour BP, 36% of the study population (55% males, 19% females) was hypertensive. Males had a higher mean BP than females (127±13/81±9 mm Hg vs 117±12/71±8 mm Hg, P<0.0001). However, significant differences in β-diversity and GM composition in hypertensive versus normotensive groups were only observed in females and not in males. Specifically, *Ruminococcus gnavus*, *Clostridium bolteae*, and *Bacteroides ovatus* were significantly more abundant in the hypertensive females, whereas *Oscillibacter* sp. CAG:241 and *Dorea formicigenerans* were more abundant in the normotensive female group. No bacterial species were found to be significantly associated with hypertension in males. Repeated cross-validation machine-learning demonstrated microbial features were more predictive of hypertension in females than males, and the addition of microbial features to clinical features (age, body mass index) improved the model's prediction accuracy in terms of AUROC from 0.69 to 0.84 in females. Total plasma SCFAs and propionic acid were independent predictors of systolic and diastolic BP in females but not males. GM β-diversity was also significantly associated with total SCFA and PA levels only in females.

Conclusions: We demonstrated that GM dysbiosis is strongly associated with 24-hour ambulatory BP in females, but not males, which may be mediated through circulating GM metabolite, propionic acid.

Neuro-Behçet's disease: a young stroke mimic

P 1

Tommy J Tang, Adrian TH Hui, KY Cheung, KF Hui
Division of Neurology, Department of Medicine and Geriatrics, United Christian Hospital, Hong Kong SAR

Background: Behçet's disease is an autoimmune disease characterised as multi-system relapsing vasculitis with unknown aetiology. The involvement of the central nervous system is rare, and there are two main subtypes: parenchymal and non-parenchymal.

Case description: A 41-year-old male with history of Behçet's disease was initially admitted in July 2022 for acute right-sided numbness, slurring of speech and left facial asymmetry. Computed tomography brain showed right pontine hypodensity. He was treated with anti-platelet agent and statin as acute ischaemic stroke. Intravenous thrombolytics was not given as it was already outside the therapeutic window. Physical examination showed Glasgow Coma Scale 15/15 with severe dysarthria. Extraocular movement showed gaze deviation to right side along with left upper motor neuron facial palsy. Right upper limb and lower limb power was 4/5; light touch and pinprick sensation was reduced over the right side. Proprioception and vibration sensations were preserved. Past-pointing and dysdiadochokinesia were demonstrated bilaterally. Contrast magnetic resonance imaging brain showed T2 hyperintense changes with multifocal areas of restricted diffusion seen at brainstem and bilateral subcortical, periventricular white matters and thalami. Magnetic resonance angiography was unremarkable. Lumbar puncture showed raised white blood cell and protein without infective changes. He was treated with intravenous methylprednisolone, followed by high-dose oral steroid (1 mg/kg/day). Infliximab was also subsequently added in the regime. Eye movement was gradually improved with less gaze deviation. Feeding tube was later removed, and he could tolerate shredded diet.

Discussion: Neuro-Behçet's disease is a rare condition with variable presentations. The diagnosis is made based on the clinical, biochemical and imaging features. Treatment is mainly based on observational studies with prednisolone and subsequently immunosuppressants and anti-tumour necrosis factor inhibitor. The prognosis is relative good if treated promptly.

P 2

Whole blood transcriptomic analysis in Parkinson's disease in Chinese—a pilot study

Phillip Chan[1,2#], Huan Zhong[1,3#], Xiaopu Zhou[1,3], YL Cheng[1,3], WL Ip[1,3], Kaman Pung[2], Ronnie M Lo[1,3], Kin Y Mok[1,3,4], Vincent CT Mok[5], Fanny C Ip[1,3], Germaine HF Chan[2], Nelson YF Cheung[2], Amy KY Fu[1,3], Nancy Y Ip[1,3]

[1] Division of Life Science, The Hong Kong University of Science and Technology, Hong Kong SAR
[2] Department of Medicine, Queen Elizabeth Hospital, Hong Kong SAR
[3] Hong Kong Center for Neurodegenerative Diseases, Hong Kong Science Park, Hong Kong SAR
[4] Department of Neurodegenerative Disease, UCL Queen Square Institute of Neurology, London, United Kingdom
[5] Gerald Choa Neuroscience Centre, Lui Che Woo Institute of Innovative Medicine, Therese Pei Fong Chow Research Centre for Prevention of Dementia, Division of Neurology, Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Hong Kong SAR
Co-first authorship

Background: To date, over 40 genetic susceptibility loci related to late-onset Parkinson's disease (PD) have been identified. Genome-wide study of gene expression, or transcriptomic profiling, measures the levels of gene expression to identify the mechanistic pathways of genetic risk loci. This pilot study examines the blood transcriptomic profile of PD in Chinese, as part of the initiative to study genetic signatures of PD in Asians.

Methods: Between 2019 and 2022, 157 participants (51 idiopathic PD; 106 healthy controls) were recruited at Queen Elizabeth Hospital and The Chinese University of Hong Kong. Blood samples were collected in PAXgene tubes for RNA extraction, followed by globin depletion to eliminate high-copy globin mRNA from the total RNA. After a quality check for integrity, purity and concentration, RNA-sequencing libraries were constructed. Sequencing reads were aligned to the human reference genome (GRCh37) using STAR aligner, followed by gene abundance quantification with StringTie2 and DESeq2 for differential expression analysis.

Results: The median age of participants was 70 (interquartile range [IQR]=68-73); 41% were female. The frequencies of Hoehn and Yahr Scale of PD participants were: Stage 2=33%; Stage 2.5=33%; Stage 3=27%; Stage 4=7%. The median age of onset and duration of PD were 59 (IQR=50-63) and 10 (IQR=8-14) years (Table).

Blood transcriptomic analysis identified 44 336 genes, of which 5888 showed associations with PD (Bonferroni corrected P<0.01). Pathway and gene ontology analysis stratified up- and down-regulated genes based on specific biological pathways. In PD participants, the most highly enriched upregulated pathways were linked to lysosomal activities, autophagy and endocytosis, whereas pathways associated with oxidative phosphorylation, mitochondrial translation, ribosomal and translational activities showed significant enrichment of downregulation.

Conclusion: Our preliminary findings highlight the capacity of the next-generation sequencing to identify potential biological pathways of significance in disease pathogenesis. A longitudinal study is under preparation to identify transcriptomic signatures related to PD progression.

TABLE. Participants' characteristics*

	All (n=157)	Parkinson's disease (n=51)	Healthy control (n=106)
Female	65 (41.4%)	21 (41.2%)	44 (41.5%)
Median age, y	70 (68-73)	68 (64-73)	70 (69-73)
Median age of disease onset, y	-	59 (50-63)	-
Mean duration of disease, y	-	10 (8-14)	-
Hoehn and Yahr Scale			
2		17 (33.3%)	
2.5		17 (33.3%)	
3		14 (27.5%)	
4		3 (5.9%)	

* Data are shown as No. (%) or median (interquartile range)

P 3

Bilateral anterior cerebral artery territory ischaemic stroke presented as akinetic mutism

Philip TC Pang, Adrian TH Hui, KF Hui
Division of Neurology, Department of Medicine and Geriatrics, United Christian Hospital, Hong Kong SAR

Background: Akinetic mutism is a rare yet well documented presentation of bilateral anterior cerebral artery (ACA) territory ischaemic stroke.

Case description: A 77-year-old gentleman, a chronic smoker with poorly controlled diabetes due to non-compliance, dyslipidaemia and hypertension, presented to the emergency department with dizziness and reduced intake. On the day of admission, his Glasgow Coma Scale score was full with unremarkable neurological examination. However, soon after admission, his Glasgow Coma Scale score dropped to 8 (E3V1M4). There was no gaze deviation or nystagmus; his bilateral pupils were equal and reactive; and peripheral examination showed flaccid limbs with preserved deep tendon reflex and bilateral down-going plantar response. Metabolic causes were ruled out, and cerebral spinal fluid showed normal result. Electroencephalogram showed no epileptiform activities, nor any clinical or subclinical seizures. Magnetic resonance imaging brain with contrast demonstrated acute infarction of bilateral ACA territories and magnetic resonance angiography of the circle of Willis demonstrated early truncation of the A2 segment of the right ACA. No sizeable anterior communicating artery was observed. Cortical branches of the left ACA were not well observed. Aspirin was given along with the normalisation of his blood glucose, blood pressure and lipid level during in-patient stay. Rehabilitation by allied health was maximised. However, the patient still remained in profound neurological deficit, being aphasic and in dependent state.

Discussion: ACA territory stroke is uncommon, accounting for 0.6% to 3% of ischaemic stroke. Large artery disease and in-situ thrombosis in ACA is more common in Asian population as the underlying aetiology. Besides the typical motor sensory deficit, ACA territory infarct can have distinctive features such as akinetic mutism, abulia, amnesia and disconnection syndrome. ACA territory stroke with bilateral involvement is even more uncommon, and previous report showed this stroke entity carries a very poor prognosis with persistent profound neurological deficit. Early recognition of akinetic mutism as presentation of bilateral ACA infarct can help clinicians to localise the lesion earlier.

S 7

Movement Disorder Symposium
Magnetic resonance imaging–guided focused ultrasound treatment for movement disorders

Binit Shah
Parkinson's Disease and Movement Disorders Division, University of Virginia, USA

Magnetic resonance imaging–guided focused ultrasound is a novel modality that has been approved for thermoablative treatment in Parkinson's disease and essential tremor. There is also growing potential for neuromodulation and selective blood-brain barrier disruption with low-intensity focused ultrasound. This talk will present the basis for thermoablative treatments for movement disorders as well as current safety, efficacy, and durability data. Additionally, future applications of low-intensity focused ultrasound in movement disorders therapeutics will be discussed.

S 8

Movement Disorder Symposium
Human functional connectome for deep brain stimulation in movement disorders

Andreas Horn
Harvard Medical School, Harvard University, USA

In recent years, large initiatives around the globe have accumulated data used to calculate average wiring diagrams of the human brain. These connectomes may also be used to investigate clinical populations and have specific value for deep brain stimulation, a procedure in which focal areas in the depth of the brain are being modulated by electrodes invasively implanted into the brains of patients.

These focal stimulations in turn lead to global network effects, often altering activity in distributed whole-brain functional brain networks. Using the human connectome, we are now poised to investigate exactly which networks seem to matter in order to achieve maximal benefits for each patient.

In this talk, Prof Horn will review methods and results from multiple studies that research laboratories worldwide have applied to study connectomic effects of focal neuromodulation. We will cover results in diseases ranging from the movement disorders spectrum (Parkinson's disease, dystonia and essential tremor) to neuropsychiatric (Tourette's disease) and psychiatric (obsessive compulsive disorder and depression) diseases. Prof Horn will also demonstrate how findings in seemingly different diseases (such as Parkinson's disease and depression) could be transferred to cross-inform one another.

UCB Epilepsy Symposium

Comorbidities matter: what we can do to find the most suitable antiepileptic drug treatment for patients with epilepsies

Steve Chung
Department of Neurology, Banner University Medical Center, Phoenix Arizona, USA

The pharmacological treatment of patients with epilepsy by antiepileptic drug (AED) and comorbidities may sometimes represent a therapeutic challenge. Firstly, the concomitant usage of AED and other drugs for comorbidities may have obvious drug interaction because of the enzyme-inducing or enzyme-inhibiting properties of different drugs. That may result in decrease of treatment efficacy or increase in adverse events. Furthermore, some AEDs may cause psychiatric and behavioural side-effects that can further worsen the situation of patients with psychiatric diseases. Choosing the AED that is fit for the current situation of epilepsy patients is a state of art.

Epilepsy Symposium
Thrombolysis-related post-stroke epilepsy

Ziyi Chen
Department of Neurology, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

Stroke ran top five in series studies on disability-adjusted life years (DALYs) led by the World Health Organization within 291 countries and territories. Epilepsy has been associated with an unfavourable functional and vital outcome of patients after stroke. We reported the clarification of definitions of post-stroke seizure and epilepsy. The risk factors of post-stroke epilepsy consisted of young age, transcatheter arterial chemoinfusion, embolism, cortical impairments, temporal involvement, and haemorrhage transformation. It is questionable whether recombinant tissue plasminogen activator (rtPA) is the risk factor. There were contradictory study results on this point. In a matched multicentre study from Europe, atherosclerosis and cortical involvement were associated with both post-stroke seizure and epilepsy, but either reperfusion or abnormal electroencephalogram within 7 days after stroke did not contribute. However Canadian researchers reported that receiving thrombolysis was one of the risk factors of new-onset epilepsy and refractory epilepsy in older adult stroke survivors. Since thrombolysis has been widely demonstrated as the gold standard therapy for acute ischaemic stroke, it is more important to explore the protective factor during thrombolysis for ischaemic stroke. There are different physio-pathological mechanisms underlying the possible association between reperfusion therapies and seizures. Neurotoxic and epileptogenic properties of rtPA are known. Experimental data suggest that endogenous rtPA-deficient mice are less susceptible to pharmacological-induced seizures; conversely, overexpression of endogenous tissue plasminogen activator in transgenically modified mice lowers seizure threshold. The hypothesis is that endogenous rtPA can sensitise the brain through an upregulation of N-methyl-D-aspartate (NMDA) receptors, leading to a lower threshold for a hyperexcitable state and an increased risk of poststroke seizures. We retrospectively analysed consecutive patients treated with intravenous thrombolysis under or outside the code stroke system. After adjustment for age and stroke aetiology, use of the code stroke system was associated with decreased odds of poststroke epilepsy (odds ratio=0.36, 95% confidence interval [CI]=0.14-0.87, P=0.024). Cox regression showed lower adjusted hazard rates (HR) for poststroke epilepsy within 5 years for patients managed under the code stroke system (HR=0.60, 95% CI=0.47-0.79, P<0.001). Therefore, we reported that code stroke system was associated with reduced odds and instantaneous risk of poststroke epilepsy. Further studies are required to identify the contribution of the individual components and mechanisms against epileptogenesis after stroke.

S 11

Bayer Stroke Symposium
Stroke prevention and contemporary vascular disease treatment strategies

Robert Welsh
Mazankowski Alberta Heart Institute and University of Alberta, Alberta, Canada

The direct oral anticoagulants have demonstrated advanced over oral vitamin K antagonists in thromboembolic prevention in patients with atrial fibrillation. This includes improved therapeutic stability, safety and efficacy as demonstrated in the pivotal phase 3 clinical trials. Furthermore, effectiveness and safety has been demonstrated in large observational data in multiple patient populations internationally including in Asia.

Recently the COMPASS (COMprehensive Post-Acute Stroke Services) study demonstrated improved cardiovascular death, stroke and myocardial infarction (24% relative risk reduction) with rivaroxaban 2.5 twice daily with low-dose acetylsalicylic acid (ASA) (dual pathway inhibition) compared to ASA monotherapy with a modest increased risk of a sensitive bleeding score (modified ISTH [International Society on Thrombosis and Haemostasis] bleeding score). The study supports the previously theoretical advantage of diphenyleneiodonium (DPI) with mild inhibition of both the antiplatelet and the anticoagulant thrombotic pathways achieving an attractive balance of safety and efficacy. Additionally, there was a 42% reduction in stroke in a population without atrial fibrillation. These findings were achieved in a broad population of patients with documented atherosclerotic cardiovascular disease including coronary and peripheral arterial disease (cerebrovascular and peripheral vascular). Results will be reviewed and potential application of DPI therapy to specific patients will be discussed.

S 12

Lundbeck Parkinson's Disease Symposium
Current trends in the diagnosis and management of Parkinson's disease

Werner Poewe
Department of Neurology, Medical University Innsbruck, Austria

When first described more than 200 years ago the diagnosis of what we now call Parkinson's disease (PD) was solely based on astute clinical observation. It took another century before the classical motor signs originally described by James Parkinson could be placed into the clinico-pathological context of cell loss in the substantia nigra, an additional 50 years to discover the neurotransmitter role of dopamine and striatal dopamine deficiency in the parkinsonian brain followed by insights into the key roles of genetics and alpha-synuclein in PD pathogenesis over the last 25 years. These dramatic advances in understanding the neurobiology of PD have led to dramatic advances both in the diagnosis and therapeutic management of the fastest growing neurodegenerative disease worldwide.

Clinical diagnostic criteria have become refined and are now supplemented by research criteria for prodromal disease stages. Future developments in the diagnosis of PD will be driven by novel imaging, tissue and fluid biomarkers, which will enable the definition of disease subtypes and enhance the detection of prodromal and preclinical disease.

Although striatal dopamine replacement with L-Dopa has remained the cornerstone of symptomatic PD drug therapy until today, multiple refinements of this pharmacological approach have increased the degree and duration of benefit patients can expect from drug therapy. This includes the development of enzyme inhibitors of MAO-B and COMT, dopamine agonists as well as non-dopaminergic agents. Infusion therapies and deep brain stimulation offer relief to those with refractory L-Dopa-related motor complications, as do novel modes of drug delivery.

The increasing burden of non-motor symptom along with the evolution of drug-resistant motor symptoms in advanced PD highlight the need for strategies that will slow or prevent disease progression. Based on research into the genetic architecture of PD, multiple pathogenetic pathways and novel targets for disease modifying therapies have been identified over the last 20 years and have fuelled an impressive pipeline of drugs in development.

Novartis Multiple Sclerosis Symposium

Cognitive impairment of multiple sclerosis patients and how siponimod helps in improving cognitive outcome in secondary progressive multiple sclerosis

Ralf Gold
Head, Department of Neurology, St. Josef Hospital, Ruhr University, Bochum, Germany

Cognitive impairment is a common and disabling symptom affecting multiple sclerosis (MS) patients in all phases of their disease trajectory. To benefit patients symptomatically and improving their rehabilitation, detection of cognitive impairment at its earliest stage is important. In this presentation, Prof Gold will be emphasising the importance of minimising cognitive decline in MS patients, sharing clinical data and his real-world experience on assessing and managing cognitive impairment. He will also be focusing on the role siponimod play by helping active secondary progressive patients on improving their cognitive processing speed.

Neuroimmunology Symposium
Clinical features and immunology underlying autoantibody-mediated diseases

Sarosh R Irani
Autoimmune Neurology Group, University of Oxford, United Kingdom

The field of autoantibody-mediated neurological syndromes has been advanced by the detection of autoantibodies in serum and/or cerebrospinal fluid which target the extracellular domains of specific neuroglial antigens. The clinical syndromes have phenotypes which are often highly characteristic of their associated antigen-specific autoantibody. For example, the constellation of psychiatric features and the multi-faceted movement disorder observed in patients with N-methyl-D-aspartate receptor antibodies are highly distinctive, as are the faciobrachial dystonic seizures observed in close association with LGI1 antibodies. These typically tight correlations may be conferred by the presence of autoantibodies which can directly access and modulate their antigens in vivo. Autoimmune encephalitis remains an under-recognised clinical syndrome but one where early and accurate detection is critical as prompt initiation of immunotherapy is closely associated with improved outcomes. In this review of a rapidly emerging field, Prof Irani will outline the evolution and distinctive nature of the clinical phenotypes, generalisable therapeutic paradigms, highlight contemporary methodologies of autoantibody detection, and finally discuss the likely mechanisms of autoimmunity in these patients which may inform future precision therapies.

AUTHOR INDEX

The only** disease modifying drug for relapsing MS that can deliver and sustain 4 years of disease control† with a maximum of 20 days of oral treatment in the first 2 years[1–4]

1. MAVENCLAD® SmPC, 2017. 2. Giovannoni G *et al. N Engl J Med* 2010; 362:416–426. 3. Giovannoni G *et al. EAN* 2017; [P0542].
4. Giovannoni G *et al. Accepted for publication in Mult Scler*, 31 July 2017.

*Maximum of 20 days of oral dosing over two years with no further treatment required in the next two years. For important safety information, please refer to abbreviated Prescribing Information

**There are currently no head-to-head trials. From publicly available information, accurate at date of creation – August 2017

†Disease control refers to 75.6% of patients who remained relapse-free without further treatment in Years 3 and 4[3]

MAVENCLAD®: Abbreviated Summary of Product Characteristics

MAVENCLAD® (cladribine tablets) Presentations:
MAVENCLAD 10 mg tablets

QUALITATIVE AND QUANTITATIVE COMPOSITION
Each tablet contains 10 mg of cladribine

INDICATIONS
MAVENCLAD is indicated for the treatment of adult patients with highly active relapsing multiple sclerosis (MS) as defined by clinical or imaging features.

DOSAGE AND ADMINISTRATION
Treatment with MAVENCLAD must be initiated and supervised by a physician experienced in the treatment of MS. The recommended cumulative dose of MAVENCLAD is 3.5 mg/kg body weight over 2 years, as one treatment course of 1.75 mg/kg/year. Each treatment course consists of two treatment weeks, one at the beginning of the first month and one at the beginning of the second month of the respective treatment year. Each treatment week consists of 4 or 5 days of treatment at 10 mg or 20 mg as a single daily dose, depending on body weight. Following completion of the two treatment courses, no further cladribine treatment is required in Years 3 and 4. Re-initiation of therapy after Year 4 has not been studied. Lymphocyte counts must be normal before initiating MAVENCLAD in Year 1 or at least 800 cells/mm³ before initiating MAVENCLAD in Year 2. If necessary, the treatment course in Year 2 can be delayed for up to 6 months to allow for recovery of lymphocytes. If this recovery takes more than 6 months, the patient should not receive MAVENCLAD any more.

CONTRAINDICATIONS
Hypersensitivity to cladribine or any of the excipients, infection with human immunodeficiency virus, active chronic infection (tuberculosis or hepatitis), initiation of treatment in immunocompromised patients, including patients currently receiving immunosuppressive or myelosuppressive therapy, active malignancy, moderate or severe renal impairment or in pregnancy and breastfeeding.

Fax: (+852) 2345 2040

PRECAUTIONS
Cladribine's mode of action is closely linked to a reduction in lymphocyte count. The effect on lymphocyte count is dose-dependent. Decreases in neutrophil count, red blood cell count, haematocrit, haemoglobin or platelet count have also been observed in clinical studies, although these parameters usually remain within normal limits. Lymphocyte counts must be determined prior to therapy in Years 1 and 2, and at 2 and 6 months after start of treatment in each treatment year. Cladribine can reduce the body's immune defence and may increase the likelihood of infections. HIV infection, active tuberculosis and active hepatitis must be excluded before initiation of cladribine. Screening for latent infections, including tuberculosis and hepatitis B and C, must be performed prior to initiation of therapy in Years 1 and 2. A delay in initiation of cladribine should also be considered in patients with an acute infection until the infection has been adequately treated. Vaccination of patients negative for varicella zoster virus antibodies is recommended prior to initiation of MAVENCLAD therapy; treatment with MAVENCLAD must be postponed for 4 to 6 weeks to allow for the full effect of vaccination to occur. The incidence of herpes zoster was increased in patients on cladribine; anti-herpes prophylaxis should be considered during Grade 4 lymphopenia. Cases of progressive multifocal leukoencephalopathy have been reported for parenteral cladribine in patients treated for hairy cell leukaemia with a different treatment regimen. In the clinical study database of cladribine in MS (1,976 patients, 8,650 patient-years) no case of PML has been reported. Baseline magnetic resonance imaging (MRI) should be performed before initiating MAVENCLAD. Malignancies were observed more frequently in cladribine-treated patients than in patients who received placebo in clinical trials. In patients who require blood transfusion, irradiation of cellular blood components is recommended prior to administration to prevent transfusion-related graft-versus-host disease. In patients previously treated with immunomodulatory or immunosuppressive medicinal products, the mode of action and duration of effect of the other medicinal product should be considered prior to initiation of MAVENCLAD. When switching from another MS medicinal product, a baseline MRI should be performed, usually within 3 months. Use of MAVENCLAD is not recommended in patients with moderate or severe hepatic impairment. MAVENCLAD contains sorbitol. Patients with hereditary problems of fructose intolerance should not take this medicinal product.

INTERACTIONS
MAVENCLAD contains hydroxypropylbetadex, which may be available for complex formation with other medicinal products, potentially leading to an increase in bioavailability of such a product. It is recommended that administration of any other oral medicinal product be separated from that of MAVENCLAD by at least 3 hours. Initiation of cladribine treatment is contraindicated in immunocompromised patients because of a risk of additive effects on the immune system. The use of MAVENCLAD with interferon beta results in an increased risk of lymphopenia. Additive haematological adverse reactions may be expected if cladribine is administered prior to, or concomitantly with, other substances that affect the haematological profile. Treatment with MAVENCLAD should not be initiated within 4 to 6 weeks after vaccination with live or attenuated live vaccines because of a risk of active vaccine infection. Inhibition of breast cancer resistance protein (BCRP or ABCG2) in the gastrointestinal tract may increase the oral bioavailability and systemic exposure of cladribine. The bioavailability, intracellular distribution and renal elimination of cladribine may theoretically be altered by potent equilibrative nucleoside (ENT1) and concentrative nucleoside (CNT3) transporter inhibitors. It is recommended that co-administration of potent ENT1, CNT3 or BCRP inhibitors be avoided. A possible decrease in cladribine exposure should be considered if potent BCRP or P-glycoprotein transporter inducers are co-administered. It is unknown whether cladribine may reduce the effectiveness of systemically acting hormonal contraceptives (see below).

FERTILITY, PREGNANCY, LACTATION
Before initiation of treatment in both Years 1 and 2, women of childbearing potential and males who could potentially father a child should be counselled regarding the potential for serious risk to the fetus and the need for effective contraception. In women of childbearing potential, pregnancy must be excluded before the initiation of MAVENCLAD in Years 1 and 2, and prevented by use of effective contraception during cladribine treatment and for at least 6 months after the last dose. Women using systemically acting hormonal contraceptives should add a barrier method during cladribine treatment and for at least 4 weeks after the last dose in each treatment year. Women who become pregnant during therapy with MAVENCLAD should discontinue treatment. Male patients must take precautions to prevent pregnancy of their partner during cladribine treatment and for at least 6 months after the last dose. Cladribine could cause congenital malformations when administered during pregnancy. Studies in animals have shown reproductive toxicity. MAVENCLAD is contraindicated in pregnant women. It is not known whether cladribine is excreted in human milk. Because of the potential for serious adverse reactions in breastfed infants, breastfeeding is contraindicated during treatment with MAVENCLAD and for 1 week after the last dose.

UNDESIRABLE EFFECTS
The most clinically relevant adverse reactions reported in patients with MS who received MAVENCLAD at the recommended cumulative dose of 3.5 mg/kg over 2 years in clinical studies were lymphopenia and herpes zoster. **Very common**: lymphopenia. **Common**: oral herpes, dermatomal herpes zoster, decrease in neutrophil count, rash, alopecia. **Very rare** tuberculosis. Prescribers should consult the Summary of Product Characteristics in relation to other adverse reactions.

Date of Summary of Product Characteristics: Sept 2018

Date of preparation of abbreviated Summary of Product Characteristics: Sept 2018

Further information is available on request.

11/F, Elite Centre, 22 Hung To Rd, Kwun Tong, Hong Kong
Tel: (+852) 2170 7700 (+852) 2389 6278

MAVENCLAD®
cladribine tablets

INNOVATIVELY SIMPLE*