

# HONG KONG MEDICAL JOURNAL

## 香港醫學雜誌

Vol 10 No 6 December 2004

Supplement 2

Editor-in-Chief  
YL Yu 余毓靈

Senior Editors  
R Kay 祁理治  
PT Cheung 張璧濤  
ITS Yu 余德新

Editors  
IKP Cheng 鄭鑑波  
LK Cheung 張念光  
KMC Cheung 張文智  
AKK Chui 徐家強  
MG Irwin  
DSC Lam 林順潮  
I Lauder  
HYS Ngan 顏婉嫦  
C Ooi  
CCP Pang 彭智培  
R Poon 潘冬平  
CH Tang 鄧燦洪  
SW Tang 鄧兆華  
TW Wong 黃大偉  
YT Wun 溫煜讚  
WC Yip 葉維晉  
KY Yuen 袁國勇  
PW Yuen 袁寶榮

Managing Editor  
Y Kwok 郭佩賢

Editorial Assistants  
W Chan 陳俊華  
B Lau 劉薇薇

### 17th Annual Scientific Meeting of The Hong Kong Neurological Society, 13–14 November 2004

Council of The Hong Kong Neurological Society	3
Organising Committee	3
Scientific Programme	4

#### FREE PAPER PRESENTATIONS

F

Natural Course of Patients with Acute Myelitis <i>KH Chan, W Mak, TS Cheng, RTF Cheung, SL Ho</i>	6
Transient Ischaemic Attack in Hong Kong Chinese <i>PW Ng, EKY Sha</i>	7
Cerebral Infarction Complicating Tuberculous Meningitis (TBM) <i>KH Chan, RTF Cheung, W Mak, R Lee, GCY Fong, TS Cheng, SL Ho</i>	8
Limb Girdle Muscular Dystrophy Type 2I <i>Bryan Lecky</i>	9
Magnetic Resonance Spectroscopy in Distinguishing Alzheimer's Disease and Fluent Progressive Aphasia <i>Peter Garrard</i>	10
Riches-Cannieu Anastomosis: An Electrophysiology Study in Hong Kong Chinese and Its Implications in Carpal Tunnel Syndrome <i>W Mak, RTF Cheung, SL Ho</i>	11
Prognosis of Primary Intracerebral Haemorrhage in Chinese Patients <i>CN Lee, CM Cheung, FKS Hon, KL Shiu, M AuYeung, TH Tsoi</i>	12

#### DISSERTATION HIGHLIGHTS

D

Potential Use of Intravenous Thrombolytics in Acute Ischaemic Stroke: Hong Kong Perspectives <i>Siu-hung Li</i>	13
Clinical Characteristics and Prognostic Factors of Cerebral Venous Thrombosis in a Multi-centre Retrospective Series of Patients <i>Ho-lun Li</i>	14
Left Ventricular Mass as Predictor of Ischaemic Stroke Severity and Outcome – a Pilot Study <i>Bun-hey Fung</i>	15
Clinically Isolated Syndromes and Multiple Sclerosis <i>KL Shiu, TH Tsoi</i>	15
Characteristics of Acute Stroke-induced Aphasia and Pattern of Language Recovery in a Chinese Cohort <i>FK Hon, Eric Pun, KL Shiu, Cindy Tsui, Vivian Chow, CM Cheung, M AuYeung, TH Tsoi</i>	16
Project of Depression on Parkinson's Disease: Part I – Local Prevalence and Disease Specific Risk Factors for Depression <i>Tin-hei Chung</i>	17

#### SYMPOSIUM I — LUNDBECK SYMPOSIUM ON DEMENTIA

SI

The Need for Pharmacotherapy for Moderate-to-severe Alzheimer's Disease <i>Rafael Blesa</i>	18
--	----

## International Editorial Advisory Board

**S Arulkumaran**  
United Kingdom

**RH Baker**  
United Kingdom

**DP Davies**  
United Kingdom

**JA Dickinson**  
Canada

**AK Dixon**  
United Kingdom

**WE Fee, Jr**  
United States

**AW Gelb**  
United States

**IB Hickie**  
Australia

**SS Hu**  
United States

**SPF Hughes**  
United Kingdom

**A Kleinman**  
United States

**D Machin**  
United Kingdom

**JM Samet**  
United States

**R Schmelzeisen**  
Germany

**DJ Weatherall**  
United Kingdom

**NS Williams**  
United Kingdom

**H Yang**  
Canada

**J Zheng 鄭杰**  
China

## SYMPOSIUM II — SYMPOSIUM ON NEUROLOGY UPDATE

**S II**

**Management of Carotid Atherosclerosis**  
*Martin M. Brown*

19

**Migraine — Auras and Complications**  
*Russell Lane*

20

## SYMPOSIUM III — SYMPOSIUM ON STROKE

**S III**

**Optimum Early Management of Stroke: UK Style**  
*Martin M. Brown*

20

**Thrombolytic and Interventional Therapy for Acute Ischaemic Stroke — Are We Ready in Hong Kong?**  
*Raymond TF Cheung, PW Cheng*

21

## SYMPOSIUM IV — SYMPOSIUM ON INFECTIONS OF THE NERVOUS SYSTEM (I)

**S IV**

**The Epidemiology and Transmission of Variant Creutzfeldt-Jakob Disease**  
*Robert G Will*

22

**The European Surveillance System for Creutzfeldt-Jacob Disease: Current Findings and Questions**  
*Robert G Will*

22

## SYMPOSIUM V — SYMPOSIUM ON NEUROMUSCULAR DISORDERS

**S V**

**On the Classification, Natural History and Treatment of the Myopathies — 50 Years On**  
*Russell Lane*

23

**Management of Myasthenia Gravis — Where are We Now?**  
*Winnie Wing-yin Wong*

23

## SYMPOSIUM VI — SYMPOSIUM ON INFECTIONS OF THE NERVOUS SYSTEM (II)

**S VI**

**Acute Viral Encephalitis in Hong Kong**  
*Andrew CF Hui*

24

## POSTER PRESENTATIONS

**P**

**Neurology of Pituitary Apoplexy**  
*Danny Yiu-fai Koo, Kin-lun Tsang*

24

**Severe Acute Respiratory Syndrome Patients are Susceptible to Cerebrovascular Disease**  
*Ping-wing Ng, Chung-ming Chu, Kwok-fai Hui*

25

**Carbon Monoxide Poisoning: CT and MR Brain Demonstration**  
*KY Lau, IYF Chan, TH Siu, TS Chan, JKW Chan, KL Shiu, CM Cheung, M AuYeung, TH Tsoi*

26

**Carotid Artery and Vertebral Artery Dissection: Clinical, CT, MR and Angiographic Correlation**  
*KY Lau, WWC Wong, L Chu, WK Kan, IYF Chan, CS Cheng, KL Shiu, CM Cheung, TH Tsoi*

26

**Dural Sinus Thrombosis — Clinical, CT & MR Correlation**  
*KY Lau, SSW Lo, WWC Wong, JKW Chan, WK Kan, KL Shiu, TH Tsoi, CM Cheung*

27

**Resolution of MR Angiography and CT Angiography of Circle of Willis**  
*JKW Chan, TH Siu, CS Cheng, KY Lau, TS Chan, YF Chan, Kelvin Lai*

28

**Why is Intracranial Large-artery Steno-occlusive Disease More Common in Asians? A Human Evolutionary Hypothesis and Its Implications**  
*W Mak, RTF Cheung, SL Ho*

29

**“Thunder Shower”: A Novel Headache Syndrome**  
*W Mak, KL Tsang, TH Tsoi, KM AuYeung, KH Chan, TS Cheng, RTF Cheung, SL Ho*

30

**Enterococcal Endocarditis Presented as Septic Spondylitis with Radiculopathy**  
*Bun Sheung*

31

### **Council of The Hong Kong Neurological Society**

President	Dr John Hiu-ming Chan 陳曉明醫生
Vice-President	Dr Raymond Tak-fai Cheung 張德輝醫生
Hon Secretary	Dr Ping-wing Ng 吳炳榮醫生
Hon Treasurer	Dr Philip Ka-kui Ng 吳家駒醫生
Council Members	Dr Koon-ho Chan 陳灌豪醫生
	Dr Gardian Chung-yan Fong 方頌恩醫生
	Dr Min-chung Kwan 關緬中醫生
	Dr Patrick Kwok-leung Kwan 關國良醫生
	Dr Leonard Sheung-wai Li 李常威醫生
	Dr Tak-hong Tsoi 蔡德康醫生
	Dr Chi-keung Wong 王志強醫生
	Dr Jonas Hon-ming Yeung 楊漢明醫生
	Dr Lawrence Ka-sing Wong 黃家星醫生
	Ms Doreen Yuk-foon Kong 江玉歡律師
Past President	The Hon Eric Li 李家祥先生
Hon Legal Advisor	
Hon Auditor	

### **Organising Committee of the 17th Annual Scientific Meeting of The Hong Kong Neurological Society**

Chairman	Dr Raymond Tak-fai Cheung 張德輝醫生
Hon Treasurer	Dr Ping-wing Ng 吳炳榮醫生
Scientific Committee	Dr John Hiu-ming Chan 陳曉明醫生
	Dr Min-chung Kwan 關緬中醫生
	Dr Patrick Kwok-leung Kwan 關國良醫生
	Dr Philip Ka-kui Ng 吳家駒醫生
	Dr Tak-hong Tsoi 蔡德康醫生
	Dr Chi-keung Wong 王志強醫生
	Dr Lawrence Ka-sing Wong 黃家星醫生
	Dr Koon-ho Chan 陳灌豪醫生
Publication Sub-Committee	Dr Gardian Chung-yan Fong 方頌恩醫生
	Dr Leonard Sheung-wai Li 李常威醫生
	Dr Jonas Hon-ming Yeung 楊漢明醫生

# SCIENTIFIC PROGRAMME

VENUE: KOWLOON SHANGRI-LA HONG KONG

13 NOVEMBER 2004, SATURDAY

09:00 – 09:15	REGISTRATION
09:15 – 10:45	FREE PAPER PRESENTATIONS Chairpersons: <i>Lawrence Wong, MC Kwan</i>
10:45 – 11:15	Coffee Break / Poster Viewing
11:15 – 12:45	DISSERTATION HIGHLIGHTS Chairpersons: <i>Ping-wing Ng, Chee-my Chang</i>
12:45 – 14:00	Lunch / Press Conference
14:00 – 15:10	LUNDBECK SYMPOSIUM ON DEMENTIA Chairpersons: <i>Leonard Li, Jonas Yeung</i>
	<b>The Need for Pharmacotherapy for Moderate to Severe Alzheimer's Disease</b> <i>Rafael Blesa</i>
15:10 – 15:30	Coffee Break / Poster Viewing
15:30 – 16:55	SYMPOSIUM ON NEUROLOGY UPDATE Chairpersons: <i>Raymond Cheung, Yuk-wah Chan</i>
	<b>Management of Carotid Atherosclerosis</b> <i>Martin M. Brown</i>
	<b>Migraine — Auras and Complications</b> <i>Russell Lane</i>

**14 NOVEMBER 2004, SUNDAY**

**09:00 – 09:15**      **REGISTRATION**

**09:15 – 10:40**      **SYMPOSIUM ON STROKE**

Chairpersons: *Edmund Woo, Patrick Li*

**Optimum Early Management of Stroke: UK Style**

*Martin M. Brown*

**Thrombolytic and Interventional Therapy for Acute Ischaemic Stroke – Are We Ready in Hong Kong?**

*Raymond TF Cheung, PW Cheng*

**10:40 – 11:10**      Coffee Break / Poster Viewing

**11:10 – 12:30**      **SYMPOSIUM ON INFECTIONS OF THE NERVOUS SYSTEM (I)**

Chairpersons: *YL Yu, TH Tsoi*

**The Epidemiology and Transmission of Variant Creutzfeldt-Jakob Disease**

*Robert Will*

**The European Surveillance System for Creutzfeldt-Jacob Disease: Current Findings and Questions**

*Robert Will*

**12:30 – 13:45**      Lunch

**13:45 – 15:15**      **SYMPOSIUM ON NEUROMUSCULAR DISORDERS**

Chairpersons: *Richard Kay, John Chan*

**On the Classification, Natural History and Treatment of the Myopathies – 50 Years On**

*Russell Lane*

**Management of Myasthenia Gravis – Where are We Now?**

*Winnie Wing-yin Wong*

**15:15 – 15:30**      Coffee Break / Poster Viewing

**15:30 – 17:00**      **SYMPOSIUM ON INFECTIONS OF THE NERVOUS SYSTEM (II)**

Chairpersons: *CY Huang, KK Ng*

**Acute Viral Encephalitis in Hong Kong**

*Andrew CF Hui*

**Meningitis in Hong Kong**

*PW Ng*

K. H. Chan, W. Mak, T. S. Cheng, R. T. F. Cheung, S. L. Ho

Division of Neurology, Department of Medicine, Queen Mary Hospital, The University of Hong Kong, Hong Kong

### Introduction

Acute myelitis are most commonly due to para-infectious inflammatory response. Idiopathic relapsing myelitis occur in idiopathic inflammatory demyelinating disorders (IIDD) including conventional multiple sclerosis (MS), opticospinal MS (OSMS), neuromyelitis optica (NMO) and idiopathic relapsing transverse myelitis (IRTM). Previous studies might define patients with IRTM as clinically definite MS by Poser's criteria.

### Aim

To study the frequency of IIDD in patients presenting with first myelitis attack employing stringent diagnostic criteria.

### Methods

Patients presenting with first myelitis attack without known underlying diseases had MRI spine at presentation and repeated 3 months later. All had MRI brain, visual evoked responses and serum assays for autoimmune markers within 3 months, then repeated yearly for 2 years. MS was diagnosed only if they had recurrent inflammatory demyelination affecting brain and/or optic nerves, or if MRI findings fulfilled McDonald's criteria if no recurrent clinical attack. IRTM was defined as idiopathic relapsing myelitis sparing the cerebrum, cerebellum and optic nerves, with possible MRI signal abnormality extending from cervical cord to brainstem and clinical brainstem deficits.

### Results

Thirty patients managed during January 1998 to March 2002 were studied. Follow-up duration ranged 30 to 66 months. Thirteen (43%) had single myelitis attack, 3 (10%) developed systemic lupus erythematosus. Fourteen had IIDD, 6 (20%) had MS (4 conventional, 2 opticospinal), 1 NMO, and 7 (23%) IRTM who were all female. Six of the 7 IRTM patients had myelitis extending over 2 or more vertebral segments on MRI, and were negative for CSF oligoclonal bands. Four (57%) IRTM patients had poor prognosis (1 died and 3 wheelchair-bound).

### Conclusions

MS developed in 20% of patients presenting with first attack of acute myelitis. IRTM is common locally.

P. W. Ng, E. K. Y. Sha

Department of Medicine & Geriatrics, United Christian Hospital, Hong Kong

### Background

Transient ischaemic attack (TIA) is a syndrome characterised by sudden onset of focal neurological deficit due to a vascular lesion which resolves within 24 hours. Patients suffered from TIA have a high risk of subsequent stroke or other cardiovascular events. However there are limited data on the outcome of Chinese TIA patients.

### Methods

This is a retrospective case notes review of all Chinese patients admitted to United Christian Hospital (a community hospital in Hong Kong serving a population of 600 000) in the year 2003 and discharged with a diagnosis of TIA. The presentation, cerebrovascular risk factors, investigation results, treatment and subsequent events were noted.

### Results

During the study period, 109 Chinese patients were admitted because of TIA. Sixty-four were male and 45 were female. Their age ranged from 36-96 years. The most common symptom on presentation was motor weakness (68%) followed by speech problem (15%). All except 1 patient had CT scan of the brain done. Fifty-three percent of CT brain result was normal, 33% showed non-specific ischaemic changes whereas 14% showed infarcts in the corresponding territory. Most common risk factor identified was hypertension (64%) followed by hyperlipidaemia (44%) and diabetes mellitus (31%). Carotid doppler was carried out in 42 patients with only 2 showed significant stenosis. Anti-platelet or antithrombotic was given to 107 patients. Most common drug was aspirin (83%). Thirteen patients (12%) developed ischemic stroke during follow up within 1 year.

### Conclusion

In view of the high risk of subsequent ischaemic stroke, aggressive investigation and control of risk factors was warranted in Chinese patients presented as TIA.

K. H. Chan<sup>1</sup>, R. T. F. Cheung<sup>1</sup>, W. Mak<sup>1</sup>, R. Lee<sup>2</sup>, G. C. Y. Fong<sup>1</sup>, T. S. Cheng<sup>1</sup>, S. L. Ho<sup>1</sup>

<sup>1</sup>Division of Neurology, Department of Medicine, Queen Mary Hospital, The University of Hong Kong, Hong Kong

<sup>2</sup>Department of Radiology, Queen Mary Hospital, Hong Kong

### **Background**

Cerebral infarction (CI) is a serious complication of TBM, which can be silent (silent CI) or symptomatic causing stroke (symptomatic CI). Data of topographical distribution and prognosis of CI complicating TBM are limited. The best treatments and preventive measures are unknown.

### **Methods**

TBM patients managed from January 1997 to June 2003 were prospectively studied. Treatments were standard anti-TB regimens, and corticosteroids for stage 2 and 3 TBM. Initial CT brain was performed in all patients. Reassessment CT/MRI brain was performed at 3 months of therapy and for neurological deterioration or complications. Lacunar infarction (LI) was defined as subcortical, cerebellar or brainstem infarction with a diameter of 15 mm or less on CT/MRI. Large-artery infarction (LAI) was defined as a lesion >15 mm in diameter on CT/MRI. Modified Barthel index (BI) <12 at 1 year of therapy or mortality were criteria for poor outcome. Clinical features of patients with LI only and those with LAI were compared with Student's t-test and Fisher's exact test.

### **Results**

Forty TBM patients were studied. Twelve (30%) had CI, 9 (23%) were symptomatic and 3 (8%) were silent. Age of the 12 patients with CI ranged from 18-85 years, 8 were men. Two had stroke at onset of TBM, and 7 had symptoms of meningitis before development of stroke after a mean interval of 40 days (range 0-128 days). Four (33%) patients had single CI while 8 (67%) had multiple CI. Five (42%) had LI only while 7 (58%) had LAI with or without coexisting LI. Eight (67%) had CI restricted to anterior circulation territory while 1 (8%) had posterior circulation CI only; 3 (25%) had both anterior and posterior circulation CI. Two patient died, both from extensive posterior circulation CI and 6 (50%) had BI <12 at 1 year. Hence 8 (67%) patients had poor neurological outcome. There is no significant difference in clinical features between those with LI only and those with LAI, but patients with LAI might have increased risk of developing posterior circulation CI.

### **Conclusion**

CI is a common complication of local TBM patients (30%, symptomatic in 23%) which tends to be multiple with LAI being common. About two-thirds of these TBM patients had poor neurological outcome at 1 year.



Bryan Lecky

The Walton Centre For Neurology & Neurosurgery, Liverpool L97LJ, United Kingdom

The limb girdle muscular dystrophies are a heterogeneous group. At present 5 autosomal dominant (LGMD1 types A-E) and 10 autosomal recessive (LGMD2 types A-J) conditions are described. Most are very rare. In contrast, LGMD2I, caused by a mutation in the fukutin-related protein gene (FKRP), appears to be the commonest cause of LGMD in the UK. FKRP gene mutations also cause congenital muscular dystrophy type 1C (MDC1C).

Four illustrative cases are presented. All are female with clinical onset between early childhood and the third decade. The dominant clinical features are proximal upper limb weakness, more severe proximal lower limb weakness with milder weakness of ankle dorsiflexion. Although reported to be common in the literature, muscle hypertrophy, and cardiac and respiratory muscle involvement was not seen. Serum CK is very elevated in the range 2000-9000 and the EMG shows clear myopathic changes. In 2 patients initial muscle biopsy showed inflammatory change leading to an erroneous diagnosis of idiopathic inflammatory myopathy. The 2 other initial muscle biopsies showed non-specific myopathic changes. Three patients were homozygous for the C826A mutation of the FKRP gene and the other heterogeneous (presumed to be a compound heterozygote). This condition may be relatively common and is prone to mis-diagnosis.

Peter Garrard

Institute of Cognitive Neuroscience, Alexandra House, 17 Queen Square, London WC1N 3AR, United Kingdom

## Background

Alzheimer's disease (AD) and frontotemporal dementia (FTD) are pathologically distinct neurodegenerative conditions with overlapping clinical and radiological features. Imaging studies have identified patterns of abnormality specific to clinical subgroups, but it is unclear how these observations can be translated into diagnostic information in individuals. Magnetic resonance spectroscopy (MRS) can be used to measure concentrations of major neurometabolites from specific brain regions in vivo. A combination of increased Myoinositol (MI) and reduced N-Acetyl aspartate (NAA) has been consistently reported in studies of patients with AD, though the disease specificity of these metabolic changes remains unclear.

## Methods

Short echo time (TR 3,000 ms; TE 30 ms)  $^1\text{H}$  MRS was performed on a 1.5T GE Signa scanner. Spectra were acquired from a midline volume of interest in the posterior cingulate region. Ratios of NAA and MI to Creatine (Cre) were obtained from 20 patients — 10 with AD and 10 with the temporal (progressive aphasic) variant of FTD — and age-matched cognitively normal controls.

## Results

NAA:Cre was lower and MI:Cre higher overall in both groups of patients than in controls, but no differences emerged between patient groups. When fluent and nonfluent subtypes of progressive aphasia were considered separately, values of NAA:Cre, but not of MI:Cre, distinguished the former from both AD and nonfluent progressive aphasia. Differences between groups were also seen in correlation analyses between metabolic and clinical variables.

## Conclusions

AD and fluent progressive aphasia are distinguishable in terms of posterior cingulate NAA, but not MI. Levels of both metabolites in nonfluent progressive aphasia overlap with those in AD. There is a suggestion of a differential relationship between metabolic and clinical variables in the two diseases. Further studies will determine whether these findings are focal, indicative of a nonspecific response to pathological change, or artefacts of inaccurate clinical classification.

## Riches-Cannieu Anastomosis: An Electrophysiology Study in Hong Kong Chinese and Its Implications in Carpal Tunnel Syndrome

F 6

W. Mak, R. T. F. Cheung, S. L. Ho

Neurodiagnostic Unit, Department of Medicine, Queen Mary Hospital, Hong Kong

### Background

Riches-Cannieu Anastomosis (RCA), a neural communication between ulnar and median nerves in the palm, is not an uncommon anatomical variant but its importance is seldom appreciated. The validity of grading Carpal Tunnel Syndrome (CTS) by motor conduction parameters may be affected in the presence of RCA.

### Methods

We studied consecutive referrals to WM's sessions over 9 months, excluding patients with ulnar or generalised neuropathies and non-Chinese. Compound muscle action potential (cMAP) was recorded from abductor pollicis brevis with median and ulnar stimulations at the wrist. The proportions of cMAP attributable to median or ulnar supply were used to calculate their respective nerve innervation ratio (NIR). Severity of CTS was graded by electrodiagnostic criteria.

### Results

186 hands in 93 subjects (31 male, 62 female, mean age 52 years, range 15–82) were studied, with CTS present in 68 hands (minimal 17, mild 17, moderate/severe 34). RCA was detected in 170 hands (91.4%). Mean median NIR was 0.69 (SD 0.169, range 0.26–1.0) for all hands and 0.71 (SD 0.165, range 0.32–1.0) for hands without CTS. Predominant ulnar innervation was found in 13.4% of all hands and 10.2% of hands without CTS. Degree of asymmetry of RCA in subjects without CTS (n=52) was up to 0.48. In hands without CTS, CTS of less than moderate severity, or moderate/severe CTS, mean median cMAP amplitude were 11.5, 10.58 or 7.49 mV (ANOVA  $P < 0.001$ ), respectively. However, ulnar cMAP was  $\geq 3.5$  mV in 73.5% and  $\geq 5$  mV in 44.1% of hands classified as moderate/severe CTS. Summated median and ulnar cMAP in this group ranged from 2.93–21.42 mV (mean 12.53, SD 3.850).

### Conclusion

Dual median-ulnar innervation of thenar muscles via an RCA is extremely common. In the presence of a significant RCA, (1) CTS grading by electrodiagnostic criteria may not be accurate; (2) Diagnosis of CTS by detecting wrist to palm segmental motor conduction block will not be valid; (3) Prognosis, and hence treatment, of CTS or other median neuropathies will be different.

C. N. Lee, C. M. Cheung, F. K. S. Hon, K. L. Shiu, M. AuYeung, T. H. Tsoi  
Department of Medicine, Pamela Youde Nethersole Eastern Hospital, Hong Kong

## Background and Purpose

Primary Intracerebral Haemorrhage (PICH) accounts for around 10-15% of all strokes in the western population and a higher percentage of PICH was observed in the Chinese population. Anti-thrombotic drugs are contraindicated in patients with history of PICH. The long-term prognosis after the first PICH in local population is uncertain. We sought to study the long-term risk of recurrence of stroke and the risk factors among Chinese patients.

## Methods

All PICH patients enrolled in the PYNEH stroke registry from 1 Jul 1996 to 30 Jun 1999 were identified and patients survived the first 30 days were recruited. The demographic data, clinical characteristics and the CT finding were reviewed. Secondary causes of ICH were excluded. To determine stroke recurrence and mortality, the electronic records of each of the patients at least 5 years after the index stroke were retrieved and systemically analysed. Chi-square test and logistic regression analysis were used to test the risk factors for recurrent ICH and ischaemic stroke.

## Results

A total of 260 cases of PICH were identified after excluding 6 cases of secondary cause of ICH and 17 cases of subarachnoid haemorrhage. Of the 260 cases of PICH, 77 (29.6%) died within the first 30 days of their admissions. Seventeen cases lost follow-up afterwards and no further data were obtained. Of the remaining 166 patients, 32 (19.3%) patients died within 5 years. Predictors of mortality within 5 years were advanced age, smoker and drinker. Ten patients had recurrent ICH (recurrence rate was 1.21% per year). Thirteen patients had recurrent ischaemic stroke (recurrence rate was 1.57% per year). The predictors of recurrent ICH were advanced age, history of hypertension and male sex while the predictors of ischaemic stroke were deep site of initial PICH, advanced age, history of hypertension and history of smoking

## Conclusion

PICH has a high 30-day mortality rate. Patients with PICH are at risk for developing both ischaemic stroke and recurrent haemorrhage. Patient with initially PICH at the deep site is a risk factor for ischaemic stroke.

## Potential Use of Intravenous Thrombolytics in Acute Ischaemic Stroke: Hong Kong Perspectives

D1

Siu-hung Li

Department of Medicine, North District Hospital, Hong Kong

### Objectives

Use of iv-r-tPA in acute ischaemic stroke was beneficial but only minority of patients had received it. The situation may change because the public is more health conscious. This study assessed the number of patients with acute ischaemic stroke who would be potentially eligible for iv-r-tPA in Hong Kong and the factors affecting its use.

### Methods

It was a retrospective study of all records (in a 5-month period) with diagnosis of stroke in a regional hospital. Patients admitted for stroke had CT scan brain performed in AED before admission. Patients transferred from other hospitals, returned from China, developed stroke during hospitalisation, and suffered from haemorrhagic stroke were excluded.

### Results

Among 211 patients identified, 89 patients were excluded. Of the remaining 122 patients, 57 were male and mean age (SD) was 74 (12). Median presentation time (IQR) and door-to-scan time (IQR) was 280 (392) and 59 (170) minutes respectively. Thirty-seven percent of patients had presentation time within 3 hours. Fifteen percent patients were potentially eligible for iv-r-tPA. The common reasons of ineligibility were presentation time beyond 3 hours, followed by very mild neurological deficits (NIHSS score 0-1). Univariate analysis showed severe stroke and atrial fibrillation associated with eligibility. Multivariate analysis revealed that patients with more severe stroke and independent premorbid state were more likely to be eligible for iv-r-tPA.

### Conclusion

Fifteen percent patients with acute ischaemic stroke would be potentially eligible for iv-r-tPA. Since public was better educated, physicians in Hong Kong should prepare for giving thrombolytics in near future.

Ho-lun Li

Department of Medicine, Princess Margaret Hospital, Hong Kong

## Background

Cerebral venous thrombosis was first recognised in early 18th century by Ribes. With the development and increasing availability of non-invasive neuro-imaging technique, cerebral venous thrombosis is increasingly being recognised in recent years. It is well known that the Chinese have a different thrombotic and haemorrhagic tendency compared with Caucasian. Our study will focus on whether this phenomenon affects the clinical characteristic of cerebral venous thrombosis in Chinese with that of Caucasians, as it has not been thoroughly documented previously. The aim of our study is to investigate: (1) the underlying aetiology frequency in our population, (2) clinical manifestations, (3) outcome upon discharge and one-year follow-up, (4) factors that associated with poor outcome (defined as death or Modified Rankin's Scale of  $\geq 3$  upon discharge).

## Methods

This was a retrospective study. The study period was from 1 January 1998 to 31 December 2003. Patients with cerebral venous thrombosis confirmed by neuro-imaging including CT brain, MRI brain, MRV, digital subtraction angiography, conventional angiography or in post-mortem would be recruited.

## Results

Thirty-five cases were recruited into the study. The estimated admission incidence was 1.2 per million populations per year. The age was range from 19 to 83 with a mean of 49.6. Male to female ratio was 1.8:1. The underlying aetiology included infection (20%), malignancy (14.3%), pregnancy (8.6%), oral contraceptive pills (8.6%), dehydration (5.7%), protein C deficiency (2.9%), anti-thrombin III deficiency (2.9%), anti-phospholipid syndrome (2.9%). A total of 37.5% of cases were idiopathic. Only 39.3% of the cases had inherited prothrombotic screening done in the appropriate timing. The most common presentation was headache (54.3%), followed by seizure (40%) and paresis (40%). Isolated intracranial hypertension was found in 14.3% of cases. Superior sagittal sinus was the most common site of involvement. Fifteen cases (42.9%) were treated with heparin. Seventeen cases (48.6%) were treated with low-molecular-weight heparin. One case was given local thrombolysis, rtPA. The clinical outcome (upon discharge and one-year follow-up) and mortality was similar between those treated with heparin and those treated with low-molecular-weight heparin. All haemorrhagic complications occurred in those treated with heparin.

The 3-month mortality was 11.4%. Only 5.7% of cases developed recurrence of cerebral venous thrombosis. The median Modified Rankin's Scale was one upon discharge and zero upon one-year follow-up. Despite this, 32.1% still has neurological sequelae on one-year follow-up. In univariate analysis (Chi-square test or Fisher exact test), age  $>50$ , dehydration, infection-related thrombosis and impaired conscious level upon presentation (Glasgow Coma Scale  $<14$ ) were identified as factors associated with poor outcome. In multivariate analysis, age  $>50$  and impaired conscious level upon presentation were independent predictors of poor outcome.

## Conclusion

Cerebral venous thrombosis is extremely rare among Chinese. Proper and comprehensive screening for inherited prothrombotic tendency should be done. The most common presentation is headache. Superior sagittal sinus is the most common site of involvement. Age  $>50$  and impaired conscious level upon presentation (GCS  $<14$ ) are independent predictors of poor outcome.

## Left Ventricular Mass as Predictor of Ischaemic Stroke Severity and Outcome – a Pilot Study

D3

Bun-hey Fung

Department of Medicine, Alice Ho Miu Ling Nethersole Hospital, Hong Kong

### Background

Left ventricular hypertrophy has long been recognised as a risk factor of vascular events. Moreover, there is growing belief that left ventricular mass is a continuous variable acting as risk factor for vascular event. Relatively little is known about the significance of the risk factor with concern to stroke. In this study, we investigate how left ventricular mass is related to acute ischaemic stroke severity and outcome.

### Methods

We conducted a prospective study on consecutive Chinese patients admitted to the acute stroke unit in a local regional hospital. Echocardiogram and electrocardiogram were performed to determine left ventricular mass (LVM) and to diagnose left ventricular hypertrophy (LVH) by well-adopted criteria. Modified Rankin scale (MRS), National Institutes of Health Stroke Scale (NIHSS) and modified Barthel index (MBI) are recorded as measure of severity and outcome of stroke. Patients were followed up at 3 and 6 months for reassessment and occurrence of further vascular event (including transient ischemic attack, stroke, or acute coronary syndrome) or death.

### Results

Seventy-three cases of stroke were identified, 50 of them were ischaemic stroke. Echocardiogram results were available in 37 of them. There was one case with LVM greater than the mean for three standard deviation, and was treated as an outlier. There was a significant negative correlation between LVM and MBI on admission and day 10 after admission. Patients with higher NIHSS on admission tend to have higher LVM. Those patients with lower MBI at 3 and 6 months tend to have higher LVM.

### Conclusion

Patients with greater ventricular mass were associated with more severe stroke and poorer outcome in this pilot study. Left ventricular mass might be useful for further risk stratification for patient at risk of vascular event.

## Clinically Isolated Syndromes and Multiple Sclerosis

D4

K. L. Shiu, T. H. Tsoi

Department of Medicine, Pamela Youde Nethersole Eastern Hospital, Hong Kong

Multiple sclerosis (MS) is an idiopathic inflammatory demyelinating disease of the central nervous system. We would wait until the second clinical attack before we diagnose clinical definite MS using the Poser criteria in usual local practice. With the recent revision of diagnostic criteria by the International Panel of experts, patients can be diagnosed earlier after a clinically isolated syndrome (CIS) if magnetic resonance imaging (MRI) findings fulfill the criteria for dissemination in time and space. There are convincing data from histopathological studies, neuroimaging studies and therapeutic trials demonstrating early irreversible axonal damage. Two major clinical studies had shown that early initiation of immunomodulatory therapy after CIS delays the development of clinical definite MS.

We performed a prospective study on the natural history of 29 Chinese CIS patients with median follow-up of 34 months. The conversion of CIS to MS in local Chinese patients (45% at 18 months) was similar to that of Caucasians. Factors significantly associated with the development of MS after CIS were younger age at onset, brainstem syndrome on presentation, positive oligoclonal band, and multiple lesions on baseline MRI scan. The use of McDonald criteria could allow the diagnosis of MS earlier with satisfactory confidence. Use of immunomodulatory therapy should be considered in high-risk CIS patients while the quest for specific therapy continues.

## Characteristics of Acute Stroke-induced Aphasia and Pattern of Language Recovery in a Chinese Cohort

D5

E. K. Hon<sup>1</sup>, Eric Pun<sup>2</sup>, K. L. Shiu<sup>1</sup>, Cindy Tsui<sup>2</sup>, Vivian Chow<sup>2</sup>, C. M. Cheung<sup>1</sup>, M. AuYeung<sup>1</sup>, T. H. Tsoi<sup>1</sup>

<sup>1</sup>Department of Medicine, Pamela Youde Nethersole Eastern Hospital, Hong Kong

<sup>2</sup>Department of Speech Therapy, Pamela Youde Nethersole Eastern Hospital, Hong Kong

### Background

Aphasia is a common and debilitating problem resulting in significant impact to both patient and family. With the improved understanding of the neurocognitive functions, the concept of aphasia as a disorder is evolving. However, data on aphasia in the Chinese population remains limited.

### Methods

We conducted a prospective longitudinal observational study in a cohort of stroke-induced aphasic Chinese in Hong Kong. We screened Cantonese-speaking patients who presented with acute stroke resulting with aphasia from Dec 2002 to May 2003. Patients with pre-existing language or cognitive impairment, poor GCS, significant co-morbidity were excluded. Language was assessed with the Chinese Aphasia Battery (CAB), during the acute stage, 1 week and 3 months after the index stroke. CT brain scan was used as the primary neuroimaging tool.

### Results

There were 484 acute strokes in the study period, 73 had aphasia; 27 were recruited in the study. There were 15 global aphasia (GA) (55.6%), 6 transcortical aphasia (22.2%), 4 anomic aphasia (14.8%), 1 BA (3.7%) and 1 conduction aphasia. Twelve (44.4%) showed improvement in language function at 3 months. Four (14.8%) showed dramatic improvement from GA to normal or anomic aphasic. GA was the most important factor for poor outcome. Good prognostic factors for language recovery included anomic aphasia at presentation, higher education level, less severe stroke, lesion restricted to subcortical structure, and possibly haemorrhagic stroke.

### Conclusion

The data suggest that there is more global and transcortical aphasia and less Broca's or Wernicke's aphasia in Chinese population, with better prognosis of language recovery.



## Project of Depression on Parkinson's Disease: Part I – Local Prevalence and Disease Specific Risk Factors for Depression

Tin-hei Chung

Department of Medicine, Kwong Wah Hospital, Hong Kong

### Background

Depression is the most common neuropsychiatric manifestation of Parkinson's Disease (PD) causing a considerable influence on patient's quality of life (QOL). Averaging the data from previous studies, prevalence of depression in PD patients attending neurological outpatient clinics was 40%. However, the local prevalence of depression in PD and disease-specific risk factors of depression in PD were lacking.

### Objective

Project of Depression on Parkinson's Disease (PD-PD) is conducted to determine the local prevalence of depression and the disease-specific risk factors for depression in PD.

### Methods

The study was carried out in the neuromedical outpatient clinic of Kwong Wah Hospital over a period of 4 months. A total of 109 Parkinsonism patients were identified from PD registry. Three secondary Parkinsonian and 6 demented patients were excluded. Another 9 patients refused to participate because of personal reasons. Eventually 91 patients were enrolled. There were totally 17 clinical variables to represent their demographic data, disease history and Parkinsonian disability. In structured interviews, Hamilton Depression Rating Scale (HDRS-17 items) was used as a diagnostic tool to screen depression and then calculate the prevalence. Any correlation between the variables with depression was evaluated in both bivariate and multivariate logistic regression analyses separately.

### Results

Twenty-six (29%) patients were recognised to have depression. Among the depressed patients, 6 (23%) were graded in a moderate to severe range. Loss of libido, early and middle insomnia were the most frequent depressive symptoms. None had suicidal ideas, thoughts or attempts. The 6 variables including postural instability ( $P<0.001$ ), Hoehn Yahr (HY) staging 4-5 ( $P<0.001$ ), fall ( $P<0.001$ ), PD duration of 5 years or more ( $P=0.003$ ), motor fluctuation ( $P=0.008$ ) and peak dose dyskinesia ( $P=0.042$ ) were significantly correlated with depression in the bivariate analyses. Examining all the 17 variables in the multivariate regression model, the later four variables were confounding factors. Together with first two variables, family history of depression ( $P=0.010$ ) and tremor ( $P=0.038$ ) were found to be the disease-specific risk factors for depression in PD. The other variables including age, sex, educational level, marital status, presence of co-morbid somatic disorders, side of disease onset, motor symptoms such as slowness, stiffness and freezing did not demonstrate any significant association with depression.

### Conclusions

The prevalence of depression in PD in the regional hospital was 29%, which is as common as the previous studies. The PD patients are more likely to have depression if they have a family history of depression or suffer from postural instability, tremor and marked functional impairment (HY staging 4-5). Awareness and recognition of the depression-specific risk factors in daily practice should indicate for further screening, as it is a treatable condition.

**Rafael Blesa**

Director, Neurology Department, Hospital de la Sta Creu I Sant Pau, Autonomous University of Barcelona, Spain

Over the past decade, studies on neurodegenerative diseases have gone from empiric and descriptive to mechanism-based and translational. The simultaneous convergence of technological and informational advances in genetics, in molecular biology, in in vitro models, cell-based models and rodent models of disease allows for the systematic examination of factors controlling the diseases. The fields are moving rapidly and a whole new era in CNS therapeutics is emerging.

Postmortem studies in the neurodegenerative diseases indicate that although there is substantial cell death in each, there are also a substantial number of surviving cells that have shrunk in size, reduced their dendritic and axonal branching and which have lost many of the neurotransmitter markers. If these cells can be rescued, there is every indication that individuals with neurodegenerative diseases may actually improve.

Most of the currently approved treatments for Alzheimer's Disease (AD) are designed to enhance the brain transmitter system that uses Acetylcholine. These agents have been successful for alleviating cognitive, behavioural, and functional problems in mild-to-moderate AD, primarily by helping patients to maintain their abilities.

In addition to these approaches, it is thought that overexcitation of NMDA receptors by the neurotransmitter glutamate may play a role in AD since glutamate plays an integral role in the neural pathways associated with learning and memory. Memantine, a low-to-moderate affinity NMDA (N-methyl-D-aspartate) receptor antagonist, selectively blocks the excitotoxic effects associated with abnormal transmission of glutamate, while allowing for the physiological transmission associated with normal cell functioning. Memantine has shown a significant and consistent benefit for moderate-to-severe Alzheimer's patients in multiple, well-controlled trials, when used alone or in combination with a currently approved treatment.

Additional therapeutic ideas are suggested because of epidemiological observations or basic science studies into the mechanisms of disease. Studies have therefore been performed or are under way to assess estrogen, anti-inflammatories, statins, homocysteine-lowering agents, and anti-oxidants in the treatment of AD. The tools are available to accelerate research on the neurodegenerative diseases and many of the critical pathways involved in cell death have already been identified for Alzheimer's, Parkinson's and Huntington's diseases and amyotrophic lateral sclerosis. Using these model systems it is possible to explore the effects of large numbers of chemicals on specific molecular targets as a high throughput screen and come up with new therapeutic agents in the future.

**Martin M. Brown**

Professor of Stroke Medicine, Institute of Neurology, University College London, United Kingdom

The medical management of carotid atherosclerosis should include life style changes, lowering blood pressure and statin therapy. In the Heart Protection Study, randomisation to simvastatin 40 mg was associated with the halving of the rate of carotid endarterectomy or angioplasty. It is also logical to prescribe antiplatelet therapy as part of best medical management, although benefit has not specifically been demonstrated in patients with carotid stenosis alone. The randomized trials of carotid endarterectomy have shown that best medical management is associated with a very high rate of recurrent stroke in patients with recently symptomatic severe carotid artery stenosis. Carotid endarterectomy reduces this risk substantially and is clearly indicated in the majority of patients with recently symptomatic severe stenosis (greater than 70% measured using the NASCET method). Patients with near occlusion of the carotid artery do not benefit from surgery. For patients with moderate stenosis (50–70%) the benefits are less clear, but are greater in patients with more recent symptoms, in men and in patients with recent hemisphere stroke. In contrast to symptomatic stenosis, patients with asymptomatic stenosis, or symptoms more than six months prior to presentation, have a very low risk of ipsilateral stroke. The recently published Asymptomatic Carotid Surgery Trial (ACST) showed a small benefit to surgery in patients under the age of 75. There was no benefit in patients over the age of 75 and the benefits in women were uncertain. Of 100 asymptomatic patients operated, only about 9 benefit from avoiding stroke, 3 are harmed by operative stroke or death, and 88 have unnecessary surgery without harm. Recently, there has been increasing interest in carotid angioplasty and stenting as an alternative to carotid endarterectomy. The largest randomised trial of angioplasty and stenting, the Carotid and Vertebral Artery Transluminal Angioplasty Study (CAVATAS) showed no difference in the major risks and benefits of endovascular treatment compared to surgery, but minor complication rates favoured endovascular treatment. A systematic review of all the randomised trials of carotid stenting showed no difference in the major risks of endovascular treatment compared with surgery, but the confidence intervals were wide and both methods carried a significant risk of stroke at the time of treatment. Primary stenting and protection devices had been introduced to improve the safety of endovascular treatment, but they have theoretical disadvantages. Further randomised trials of carotid stenting are therefore required. We have started the International Carotid Stenting Study (ICSS or CAVATAS-2) to obtain more data on the risks and long-term benefits of carotid stenting in comparison to surgery. ICSS is a multicentre, randomised clinical trial. Centres are required to have a neurologist or stroke physician, a vascular surgeon or neurosurgeon and an interventionalist, with audited experience of carotid interventions and training in carotid stenting. To date in October 2004, 26 centres in 10 countries have enrolled 410 patients. ICSS together with other ongoing trials will establish the place of stenting in the treatment of carotid stenosis.

### Russell Lane

Consultant Neurologist, Charing Cross Hospital in London; Honorary Senior Lecturer in Neurology, Faculty of Medicine, Imperial College, United Kingdom

Primary headaches are defined by their symptom characteristics, notably the frequency and duration of attacks, and the presence of trigeminal autonomic symptoms. Although a multitude of headache types is recognised, there is increasing evidence that similar neural processes, mainly in the brainstem and sometimes in the cortex, especially the posterior regions, may drive these individual headache forms. This process may be symptomless, or cause only non-descript malaise, but if the ‘migraine mechanism’ involves eloquent structures, the patient perceives an aura.

Auras can encompass a wide variety of symptoms, in addition to the ‘typical’ visual, somasthetic and dysphasic forms. These include auras involving other primary sensory modalities, motor auras, and auras involving higher cortical functions, such as memory, affect, and perceptions of time and space. A classification of auras is proposed, based on a database of more than 300 cases collected over the last decade. It is likely that many of the otherwise unexplained paroxysmal neurological symptoms encountered in neurology clinics, such as recurrent vertigo, syncope and transient amnesia, are migraine ‘auras’.

Functional neuroimaging involving a variety of methods has begun to provide insight into the ‘migraine mechanism’. It seems that the fundamental neural activation that underlies attacks does not injure the brain directly; yet migraine can cause serious disorders, including stroke and epilepsy. Possible reasons for this will be considered.

## Optimum Early Management of Stroke: UK Style

### Martin M. Brown

Professor of Stroke Medicine, Institute of Neurology, University College London, United Kingdom

At the National Hospital for Neurology and Neurosurgery, Queen Square, London we have developed a comprehensive stroke service designed to implement evidence-based guidelines for acute and early management of stroke. The most important measure likely to benefit the most patients is to admit the patient with stroke to a multidisciplinary stroke unit where specialised staff can implement integrated care pathways. The key to focused management is accurate diagnosis, which is aided by access to diffusion weighted imaging, magnetic resonance angiography and echocardiography. Acute treatments for ischaemic stroke should include aspirin and intravenous thrombolysis for selected patients, which have only recently been licensed in the UK. The latter requires development of a specialised service and at Queen Square we have recently introduced a Rapid Ambulance Protocol for the Identification of Stroke (RAPIDS) to bring patients with suspected stroke directly to the acute stroke unit. To protect the penumbra from further damage requires stabilisation of physiological parameters, although as yet, no neuroprotective drugs have been shown to improve outcome. Occasional patients with malignant middle cerebral or cerebellar oedema may require craniectomy as a life-saving measure. Despite the evidence for these measures, the National Sentinel Audit has shown that in the UK not all patients benefit from access to a stroke unit and the number of patients receiving thrombolysis is currently very small. In the future, improvements in stroke care in the UK will follow the official introduction of the sub-specialty of Stroke Medicine and the development of hyperacute Stroke Care Units.

# Thrombolytic and Interventional Therapy for Acute Ischaemic Stroke — Are We Ready in Hong Kong?

S III-2

Raymond T. F. Cheung, P. W. Cheng

University Department of Medicine, University of Hong Kong, Hong Kong

## Background

Stroke is the second leading cause of death in China and many parts of the world. Stroke is also a very common cause of neurologic disability. Advances in acute stroke therapy include intravenous and intra-arterial thrombolysis, acute stroke unit, and imaging of ischaemic penumbra. Acute thrombolysis is only a component of acute stroke care, as few stroke patients are eligible. Haemorrhagic transformation of infarction (HTI) remains a major concern.

## Methods

In collaboration with the Accident and Emergency Department and Department of Radiology at the Queen Mary Hospital, stroke patients were screened for immediate computed tomography (CT) of the head and eligibility for intravenous or intra-arterial thrombolysis, or for recruitment into ongoing trials of neuroprotectants since November 1997. Owing to lack of supporting manpower and resources, screening was performed only during office hours.

## Results

Quite a number of patients were identified at the Accident and Emergency Department as suffering from hyperacute stroke. The diagnosis was not stroke in some, many were ineligible because they had intracerebral haemorrhage or the treatment time window was exceeded, and some patients or their relatives did not accept the potential risk of acute thrombolysis. Altogether 19 patients were treated with acute thrombolysis, and another 19 patients participated in clinical trials on neuroprotectants. Five patients received intra-arterial thrombolysis, and 14 received intravenous thrombolysis. For the latter, the mean door-to-CT time was 56 min, and the mean door-to-needle time was 107 min. HTI occurred in 2 patients with intravenous thrombolysis and in 4 patients with intra-arterial thrombolysis.

## Conclusions

Reorganization of acute stroke service with allocation of supporting manpower and resources will allow round-the-clock screening of stroke patients for acute thrombolysis. More experience with acute thrombolysis will shorten the door-to-CT time and door-to-needle time and provide more reliable information on local rate of HTI.

**Robert G. Will**

National CJD Surveillance Unit, Bryan Matthews Building, University of Edinburgh, Western General Hospital, Crewe Road, Edinburgh EH4 2XU, United Kingdom

Variant Creutzfeldt-Jakob disease (vCJD) is a novel human prion disease, which is caused by transmission of the agent of bovine spongiform encephalopathy (BSE) to the human population. Despite an extensive potential exposure of people in the UK to high levels of infectivity in the food chain, fears of a major epidemic have not yet been borne out. To date (August 2004) 147 cases of definite or probable vCJD have been identified in the UK and analysis of trends in deaths and clinical onsets indicates that the epidemic may have peaked. Risk factors for the development of vCJD include methionine homozygosity at codon 129 of the prion protein gene, a young age and residence in the UK, although this is not an absolute risk factor. Cases of vCJD have been identified in other countries (France 7, Ireland 1, Italy 1, USA 1, Canada 1) and, although some of the cases, for example those in the USA and Canada had a history of residence in the UK, the French and Italian cases did not.

The tissue distribution of infectivity in variant CJD is different from other human prion diseases with PrP immunostaining and infectivity identified in a range of lymphoreticular tissues, including appendix and tonsil. This has raised concerns about the possibility of secondary transmission of vCJD through medical procedures such as blood transfusion and in recent months one case of possible transfusion-transmitted vCJD has been identified, and a second case has also been found in which there may have been pre-clinical infection related to blood transfusion. This latter case was a heterozygote at codon 129 of the prion protein gene, raising the possibility that a larger proportion of the human population may be susceptible to infection with BSE. A range of precautionary measures has been taken in order to minimise the risks of secondary transmission of vCJD.

## The European Surveillance System for Creutzfeldt-Jakob Disease: Current Findings and Questions

**Robert G. Will**

National CJD Surveillance Unit, Bryan Matthews Building, University of Edinburgh, Western General Hospital, Crewe Road, Edinburgh EH4 2XU, United Kingdom

A harmonised system for the surveillance of Creutzfeldt-Jakob disease (CJD) in a number of European countries was established in 1993 with shared protocols for case identification and classification. Since then a number of other countries have joined this system, which now covers all member states and a number of allied countries including Canada, Australia and Israel. More recently the coordination of surveillance of CJD has been extended to members of the European Union in central and eastern Europe. One important aim of the system has been to identify new forms of human prion disease and in 1996 when variant CJD (vCJD) was identified, the hypothesis of a link with BSE was strongly supported by data from European countries outside the UK in which similar cases had not, at that time, been identified. Although the major epidemic of vCJD is in the UK, a small number of cases have been identified in France and Italy. Although the BSE epidemic has now declined in the UK, prion diseases have a long incubation period and there remains a possibility that further cases of vCJD will be identified in other European countries.

One important aim of the European CJD surveillance system has been to pool data on this rare disease, in order to address scientific questions that may be difficult to address with small data sets. A number of scientific publications have arisen from this system, including the identification of an age influence on the distribution of codon 129 genotypes in sporadic CJD and more recently a detailed analysis of survival in all forms of human prion disease, which may be helpful in the future in assessing potential therapies.

Although with time all participating countries have achieved systematic surveillance for CJD as judged by annual incidence and mortality rates, the identification of countries such as Switzerland with a relatively high incidence of sporadic CJD remains unexplained. Inter-country comparisons of a range of parameters including age at death, duration of illness, PRNP genotype distribution etc, is an important strategy for identifying any future changes in one country that may indicate a novel form of human prion disease.



## On the Classification, Natural History and Treatment of the Myopathies — 50 Years on

S V-1

Russell Lane

Consultant Neurologist, Charing Cross Hospital in London; Honorary Senior Lecturer in Neurology, Faculty of Medicine, Imperial College, United Kingdom

This year marks the half centenary of the publication of Walton and Nattrass's seminal paper on the primary myopathies. The classification that they introduced, based on earlier literature and the clinical features and inheritance patterns of the cases examined in the North-East of England, provided sound foundations for the practise of clinical myology for many years. However, recent developments in histopathology, immunohistochemistry and molecular biology have demonstrated a substantial and confusing heterogeneity within phenotypic groups. There are dozens of primary myopathies, each with defining genomic and proteomic signatures, and evaluation based on a patient's clinical features, pedigree and routine muscle histopathology alone may not provide an accurate diagnosis.

There is no all-embracing classification system, but some order can be brought to this otherwise complex situation by grouping primary myopathies with regard to the sub-cellular location of the aberrant proteins. For example, axial and limb-girdle pattern dystrophies are generally due to defects in structural sarcolemmal, nuclear membrane or contractile proteins; congenital dystrophies to abnormalities in the extracellular matrix; and myotonic disorders to defective muscle ion channel proteins. However, there are exceptions, and the molecular basis for some of the commonest primary myopathies remains unknown.

Unfortunately, the increasing insight into the basis of these disorders has yet to provide any means of substantially altering their natural history.

## Management of Myasthenia Gravis – Where are We Now?

S V-2

Winnie Wing-yin Wong

Division of Neurology, Department of Medicine, Queen Elizabeth Hospital, Hong Kong

Since the first description of myasthenia gravis (MG) by Wilhelm Erb in 1878, much of the understanding in its pathophysiology and improvement in its treatment have been achieved. The prevalence of MG has steadily increased, probably because of the ageing population worldwide. MG is undoubtedly the most thoroughly understood of all autoimmune diseases and has served as a model for the elucidation of mechanisms underlying other autoimmune diseases. The antibodies against the acetylcholine receptor (AChR), which produce a compromise in the end-plate potentials, reduce the safety factor for effective synaptic transmission. In recent years, seronegative MG has been gaining more attention from the neuromuscular authorities. It is proving to be heterogenous both clinically and immunologically. In the absence of AChR antibodies, these patients are believed to contain a factor, probably an immunoglobulin M antibody, which alters AChR function in in-vitro assays. The antibody to muscle-specific tyrosine kinase (MuSK) has been identified to inhibit agrin-induced AChR clustering in muscle myotubes.

The mortality and morbidity associated with MG has dramatically decreased in the last four decades. The advances in the critical care and mechanical ventilation undoubtedly make a great contribution to this achievement. Also the clinical improvement with the widespread use of surgical intervention and immunosuppressive agents should not be neglected. Nonetheless, the effectiveness of thymectomy continues to be a debate in the treatment of nonthymomatous MG. The controversy is primarily because of the lack of controlled prospective studies. The current analysis has also been complicated by the absence of objective definitions of the disease severity and response to treatment. Yet the meta-analysis of various authorities generally concludes that thymectomy is recommended for those healthy, and preferably younger, patients whose myasthenic symptoms interfere with their lives enough for them to consider major surgery. Immune-directed treatment for MG, which is guided by data from the management of other autoimmune diseases, is aimed at inducing and maintaining an immunologic remission. Remission induction is usually accomplished by high-dose corticosteroids, sometimes in conjunction with intravenous immunoglobulin or plasmapheresis. Maintenance of remission can be achieved by the use of 'steroid-sparing' agents, such as azathioprine, cyclophosphamide and possibly mycophenolate. More specific treatments, based on our knowledge of pathogenesis, are still experimental but hopefully will be the history of the future.

Andrew C. F. Hui

The CNS Infectious Diseases Group

Acute encephalitis is an inflammatory process affecting the brain parenchyma. The consequence is a devastating illness that may result in disability and death. Viruses are the most common and important cause. Diagnosis may be difficult as other organisms may cause similar signs and symptoms and as infectious encephalitis may be mimicked by other encephalopathic states due to a variety of different conditions: drug-induced, toxic, metabolic, anoxic encephalopathy and acute disseminated encephalomyelitis. In the United States, West Nile encephalitis has emerged as an important cause due to the penetration of North America by the insect vector. Closer to home, a newly discovered virus, Nipah virus, was recognised as a cause of epidemic encephalitis in Malaysia recently. The aetiology of viral encephalitis in Hong Kong has not been previously characterised. We systematically reviewed the clinical and laboratory features of adult patients who were admitted from 1998-2004 with acute viral encephalitis. This was a retrospective study performed through the collaboration of a team of neurologists working in public hospitals. Individuals who fulfilled the following inclusion criteria were included: (a) patients with fever and an acute onset of focal or diffuse cerebral dysfunction (such as alteration in conscious level, behavioural change, hemiparesis); (b) CSF pleocytosis; (c) MRI or EEG abnormalities; and (d) the absence of alternative causes that could explain the clinical picture. The clinical spectrum of disease and results of investigations will be presented. We found that herpes simplex, varicella-zoster, Japanese encephalitis and enteroviruses are the commonest causes in Hong Kong.

## Neurology of Pituitary Apoplexy

**P1**

Danny Yiu-fai Koo, Kin-lun Tsang

Department of Medicine, Tseung Kwan O Hospital, Hong Kong

### Background

Pituitary apoplexy is a rare but life-threatening condition caused by sudden haemorrhage or infarction of the pituitary gland. The syndrome of acute, symptomatic pituitary apoplexy is rare, with highly variable presentation but it is common to present with neurological symptoms. The mechanism and predisposing conditions remain unclear, and therefore the diagnosis of pituitary apoplexy is difficult.

### Methods

A collection of 4 cases from a regional hospital in 6 months is reported.

### Results

All 4 patients were male with age ranged from 50 to 70 years. Underlying pathology included Rathke's cleft cyst (1), pituitary adenoma (2) and possible metastatic lung carcinoma (1). Neurological symptoms were the main presentation and comprised headache (4), bitemporal hemianopia (2) and isolated surgical oculomotor nerve palsy (2). The headache was characteristically severe, dull, persistent and frontal in location. Diagnosis was made by magnetic resonance imaging (MRI) study. Two of the 4 patients underwent early (within 1 week) surgical decompression and had full neurological recovery. One patient initially refused surgery and the oculomotor nerve palsy partially recovered spontaneously. Four weeks later, this patient accepted surgical treatment and the oculomotor nerve palsy fully recovered after surgery. One patient was not intervened because of his underlying disease and his neurology remained static. Two patients required hormonal replacement after surgical treatment.

### Conclusions

Pituitary apoplexy has variable presentation and should be considered when patients are presented with acute severe frontal headache or oculomotor nerve palsy, with or without overt pituitary dysfunction.



## Severe Acute Respiratory Syndrome Patients are Susceptible to Cerebrovascular Disease

P2

Ping-wing Ng, Chung-ming Chu, Kwok-fai Hui  
Department of Medicine and Geriatrics, United Christian Hospital, Hong Kong

### Background

Severe acute respiratory syndrome (SARS) is considered to be a potential fatal respiratory disease caused by a novel coronavirus and killed more than 300 lives in Hong Kong alone. However, there is ample of evidence that the coronavirus infection is a systemic disease and many other organs are affected. We reported 3 patients who developed cerebrovascular disease as a complication of SARS.

### Methods

In March and April 2003, more than 150 patients with a clinical diagnosis of SARS were admitted into United Christian Hospital. Three patients suffering from acute stroke during the acute phase of the illness were identified. Their clinical features and the contributing risk factors will be discussed.

### Results

All patients were female with age ranging from 25 to 73 years. The SARS syndrome was confirmed by positive RT-PCR tests for coronavirus from body fluid specimen and a positive antibody response against the virus. Their high resolution CT thorax had shown progressive infiltrates in the lungs and all suffered from hypoxaemia (oxygen saturation 88–92%) despite high flow oxygen supplement. All 3 patients had received ribavirin with subsequent treatment associated haemolysis.

Two patients developed their first ever stroke in the ward while the other patient had a recurrence of cerebrovascular accident during the acute SARS illness. Computed tomography of the brain had been performed in all patients and cerebral haemorrhage was excluded. The severity of the stroke as assessed by the National Institute of Health Stroke Score ranged from 1–10. Two of the patients were discharged home directly and 1 patient was transferred to private nursing home. The length of stay varied from 28–39 days.

### Conclusion

Coronavirus causes a systemic infection in human with severe respiratory features. Susceptible patients are also prone to the development of acute cerebral infarction.

K. Y. Lau<sup>1</sup>, I. Y. F. Chan<sup>1</sup>, T. H. Siu<sup>1</sup>, T. S. Chan<sup>1</sup>, J. K. W. Chan<sup>1</sup>, K. L. Shiu<sup>2</sup>, C. M. Cheung<sup>2</sup>, M. AuYeung<sup>2</sup>, T. H. Tsoi<sup>2</sup>

<sup>1</sup>Department of Radiology, Pamela Youde Nethersole Eastern Hospital, Hong Kong

<sup>2</sup>Department of Medicine, Pamela Youde Nethersole Eastern Hospital, Hong Kong

In 2003, 1025 people committed suicide in Hong Kong. The ratio of men to women was 2:1. Their age ranged from 20–50. 43% of 1025 people committed suicide by jumping from height, 24% by carbon monoxide (CO) intoxication, 23% by hanging themselves and 10% by other means. Since the economic crisis, the number of patients with CO poisoning has been increasing in the past few years. Computed tomography (CT) and magnetic resonance (MR) of brain obtained between 2002 and 2004 in patients with clinical history of acute CO intoxication were retrospectively reviewed. Radiologist should be aware of the CT and MR features of CO poisoning, especially when the clinical history is not informative. The CT and MR images of these patients are presented.

### **Carotid Artery and Vertebral Artery Dissection: Clinical, CT, MR and Angiographic Correlation**

K. Y. Lau<sup>1</sup>, W. W. C. Wong<sup>1</sup>, L. Chu<sup>1</sup>, W. K. Kan<sup>1</sup>, I. Y. F. Chan<sup>1</sup>, C. S. Cheng<sup>1</sup>, K. L. Shiu<sup>2</sup>, C. M. Cheung<sup>2</sup>, T. H. Tsoi<sup>2</sup>

<sup>1</sup>Department of Radiology, Pamela Youde Nethersole Eastern Hospital, Hong Kong

<sup>2</sup>Department of Medicine, Pamela Youde Nethersole Eastern Hospital, Hong Kong

Internal carotid artery or the vertebral artery dissection is an uncommon cause of stroke and accounts for 0.4–2.5% of all general population but 5–20% of strokes in young patients. Precipitating factors include hypertension, trauma, oral contraceptive or vascular pathology such as cystic medial necrosis, Marfan syndrome and fibromuscular dysplasia. However, in most cases, no specific aetiology is found. Depending on the involved artery, patients may present with ipsilateral headache, neck pain, syncope, cranial nerve palsy, amaurosis fugax or vertigo. In general, the prognosis is favourable but may be fatal due to massive stroke. Radiologists should be familiar with computed tomography (CT) and magnetic resonance (MR) imaging findings for early diagnosis and treatment. The clinical presentation, CT, MR and angiographic findings of patients with internal carotid artery or vertebral artery dissections referred to our department from 2001–2004 are presented.

K. Y. Lau<sup>1</sup>, S. S. W. Lo<sup>1</sup>, W. W. C. Wong<sup>1</sup>, J. K. W. Chan<sup>1</sup>, W. K. Kan<sup>1</sup>, K. L. Shiu<sup>2</sup>, T. H. Tsoi<sup>2</sup>, C. M. Cheung<sup>2</sup>

<sup>1</sup>Department of Radiology, Pamela Youde Nethersole Eastern Hospital, Hong Kong

<sup>2</sup>Division of Neurology, Department of Medicine, Pamela Youde Nethersole Eastern Hospital, Hong Kong

### Background

Dural sinus thrombosis is an uncommon cause of stroke. As the presenting symptoms and signs are non-specific, the radiologist should be familiar with the risk factors, the computed tomography (CT) and the magnetic resonance (MR) findings of this condition for prompt diagnosis and treatment to prevent irreversible neurological damage and fatal outcome.

### Methods

From 1998–2004, 10 patients with CT or MR findings of dural sinus thrombosis presented to our department were retrospectively reviewed. There were 2 males and 8 females. Their age ranged from 27–77 (mean, 44.1). Correlation was made between clinical presentation, CT and MR findings and their outcome.

### Results

The CT and MR findings in dural sinus thrombosis will be presented. The clinical presentation and their underlying risk factors are summarised in tables. Four presented with seizure, 3 headache, 2 both seizure and headache and 1 sudden onset of left upper limb numbness. One patient died soon after admission and urgent CT scan of brain. Nine are still alive.

### Conclusions

Dural sinus thrombosis should be suspected in patients presented with non-specific neurologic symptoms, especially those patients with known risk factors. The diagnosis is usually apparent if one correlates the clinical features with the radiological findings. MR with or without magnetic resonance angiography should be performed promptly if the CT finding is suspicious.

J. K. W. Chan, T. H. Siu, C. S. Cheng, K. Y. Lau, T. S. Chan, Y. F. Chan, Kelvin Lai  
Department of Radiology, Pamela Youde Nethersole Eastern Hospital, Hong Kong

## Background

To compare the resolution of MR Angiography (MRA) and CT Angiography (CTA) of Circle of Willis.

## Methods

Nine patients with both MR angiography and CT angiography done were retrospectively reviewed. The MR angiography was performed with a 1.5 Tesla MR machine (Symphony, Siemens Medical Systems, Erlangen, Germany) and CT angiography was performed with multi-detector CT machine (Aquilion 16, Toshiba Medical Systems Corporation, Japan).

Images were reviewed at two different computer workstations called software A (3D Virtuoso, Siemens Medical Systems, Erlangen, Germany) and software B (Vitrea 2, Vital Images Inc., USA). MRA were reviewed with software A and CTA were reviewed with software B.

Images were reviewed by two reviewers in order to identify the presence of anterior communicating artery (AcomA), posterior communicating artery (PcomA) and posterior inferior cerebellar artery (PICA). The performance of MRA in two different workstations and CTA were compared.

## Results

For MRA reviewed with software A, 26 arteries were identified and 19 arteries were not detected whereas for CTA, 36 arteries were seen with software B and 9 arteries were not visualised. There is significant difference between the ability of CTA and MRA in detection of these arteries in Circle of Willis.

## Conclusions

CTA is superior to MRA in delineation of the arteries of Circle of Willis. Thus, CTA should be the first non-invasive examination to delineate the anatomy of Circle of Willis.

## Why is Intracranial Large-artery Steno-occlusive Disease More Common in Asians? A Human Evolutionary Hypothesis and Its Implications

P7

W. Mak, R. T. F. Cheung, S. L. Ho

Division of Neurology, Department of Medicine, Queen Mary Hospital, Hong Kong

Atherosclerotic disease is the most important cause of premature mortality. The susceptibility to many diseases is determined by genetic traits. Intracranial (IC) large-artery steno-occlusive disease occurs more frequently in Asians and other non-White races than those with a European ancestry. An alternative interpretation is that IC large-artery disease occurs in all races, but is uncommon in Caucasians. Over 70% of present-day Caucasians are descendants from Middle East or central Asian nomadic hunters who diversified to settle in Europe during the Upper Palaeolithic period and lived there in relative isolation until recently. We postulate that, through an evolutionary process of allopatric speciation, these Europeans had acquired a genetic trait which increases their resistance against atherosclerosis, but with protection restricted to IC large arteries. The modern unhealthy Western lifestyle accelerates development of atherosclerosis. In Caucasians, it involves the whole vascular system but the IC large arteries, being protected by the underlying genetic mechanism, are relatively unaffected. Conversely, people living in non-Western countries generally have a healthier diet. These non-Whites usually have less severe but more generalised atherosclerosis. Nevertheless, they will still develop major vascular disease after adopting a Western lifestyle but, unlike the Caucasians, their IC large arteries will not be spared. This speculation has two implications. Firstly, as human evolution advances, if this anti-atherosclerotic mechanism extends to protect the rest of the vascular system, a new *Homo sapiens* (*HS*) subspecies that can tolerate an unhealthy diet but without developing premature vascular death will emerge. They may eventually replace the original *HS* populations through natural selection. Secondly, if the mediator of this anti-atherosclerotic mechanism can be identified and applied therapeutically, we will have an ultimate “vaccine” against atherosclerosis.

W. Mak<sup>1</sup>, K. L. Tsang<sup>1</sup>, T. H. Tsoi<sup>2</sup>, K. M. AuYeung<sup>3</sup>, K. H. Chan<sup>1</sup>, T. S. Cheng<sup>1</sup>, R. T. F. Cheung<sup>1</sup>, S. L. Ho<sup>1</sup>

<sup>1</sup>Department of Medicine, Queen Mary Hospital, Hong Kong

<sup>2</sup>Department of Medicine, Pamela Youde Nethersole Eastern Hospital, Hong Kong

<sup>3</sup>Department of Radiology, Queen Mary Hospital, Hong Kong

### **Background**

Thunderclap headache (TCH) is a primary headache syndrome. Some cases may have specific provoking factors to precipitate an attack. Bathing is an unusual trigger of acute headache. Our group reported the first two cases of shower-induced headache in 1998.

### **Methods**

We present our experience in bath-related headache (BRH) over the last 7 years and review all reported cases in the English literature.

### **Results**

Fourteen patients with BRH had been described, with 6 cases from our centres. The others were from Taiwan (5 cases) and Japan (3 cases). All patients were East Asian women. The mean age of onset was 51 years (range, 32–67 years). The typical presentation was a uniphasic cluster of paroxysmal, excruciating headache recurrently triggered by activities involving contact with water, which included shower, soaking in hot bath, exposure to steam, tooth brushing, mouth rinsing, and micturition. The headache was of split-second onset that occurred almost instantaneously with every exposure to the stimuli during the cluster. Duration of an attack was from 30 minutes to 30 hours. No secondary cause of headache was identified. Reversible multi-segmental cerebral vasoconstriction, similar to that associated with idiopathic TCH, was found in three patients. BRH is a self-limiting condition; remission was the rule after 1 week to less than 3 months. Nimodipine may be useful to hasten remission. No relapse had been reported after the initial cluster.

### **Conclusion**

BRH is a newly recognised primary headache syndrome that occurs exclusively in middle-aged or elderly Oriental women. Its clinical and radiological features are compatible with idiopathic TCH. Bathing or activities involving contact with water should be recognised as specific provoking factors of TCH.

**Bun Sheng**

Department of Medicine & Geriatrics, Princess Margaret Hospital, Hong Kong

### **Case report**

A 73-year-old diabetic man presented with neck and right shoulder pain following by weakness of right shoulder the next morning. Six months before admission he had a prostate operation and there was incomplete emptying of bladder after the procedure. Examination revealed muscle power 0/5 in right shoulder abduction and lateral rotation, elbow flexion was 0/5 and extension was 4/5. His right C5 and C6 jerks were absent and C7 was preserved. The cardiovascular examination was unremarkable initially, but few days later a soft early diastolic murmur was noticed over the aortic valve area. He did not have fever or constitutional symptoms. The blood tests revealed elevated ESR 101 mm/h but the white cell count was normal. The patient was initially treated with prednisolone for a provisional diagnosis of brachial neuritis. It was switched to antibiotics 2 days later when the heart murmur alerted the possibility of instrumentation related infective endocarditis (IE) complicated by septic spondylitis and compression radiculopathy. Later his blood culture and urine culture both yield enterococci. The MRI cervical spine confirmed the presence of right C5/C6 facet joint arthritis with soft tissue inflammation affecting the adjacent nerve roots. A 6-mm vegetation attaching to the noncoronary aortic valve leaflet was seen on transoesophageal echocardiogram. He received ampicillin and gentamicin combination therapy for 2 weeks, followed by ampicillin alone for another 4 weeks. Upon discharge his neurological deficit fully recovered.

### **Discussion**

Diagnosis of IE in elderly could be difficult because of the atypical presentation, lack of febrile response and even leucocytosis. Neurological symptoms were common in elderly IE, but a neurological deficit from infectious osteoarticular complication was rare. A recent review only identified 14 patients with enterococcal IE and infectious osteoarticular complications, and none had neurological symptom. This case illustrated the challenge in arriving at the correct diagnosis early for an appropriate treatment to be given.