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SCIENTIFIC PROGRAMME

Venue: Kowloon Shangri-La Hotel, Hong Kong

29 October 2005, Saturday

10:45 – 11:00 **Registration**

11:00 – 12:00 **Dissertation Highlights**

Chairpersons: *P. W. Ng, Jonas Yeung*

Clinical Relevance of Initial High Blood Pressure in Acute Intracerebral Haemorrhage

Tat-sun Cheng

C-Reactive Protein after Acute Ischaemic Stroke

Ka-wing Fong

Detection of Asymptomatic Diabetic Distal Symmetric Polyneuropathy with Clinical Examination and Nerve Conduction Study in Patients with Non-insulin-dependent Diabetes Mellitus

Herrick Siu-wah Lau

Homocysteinaemia and Small Vessel Disease

Eric Ka-shing Liang

Intracranial Arterial Stenosis in Atherothrombotic Middle Cerebral Artery Territory Infarction of Chinese Patients

Man-wai Lo

12:00 – 12:45 **Free Paper Presentations**

Chairpersons: *C. Y. Fong, John Chan*

Microbleeds as an Independent Predictor for Future Intracerebral Haemorrhage in Acute Ischaemic Stroke

Yannie Soo, Lawrence Wong, Songran Yang, Wynnie Lam

In-patient Carotid Ultrasound Screening Performed by Physicians for Patients with Ischaemic Stroke—a Pilot Program in a Regional Hospital

Tak-sun Tse, Chi-nam Lee, Ka-lock Shiu, Sonny Fong-kwong Hon, Tak-hong Tsoi

Safety and Performance of the Wingspan Stent System in Patients with Recurrent Stroke Attributable to Intracranial Atherosclerotic Disease

Wai-man Lui

Topiramate for Migraine Prevention: a Prospective Observational Study

Terrance Ho-lun Li, Andrew Hui, Bun Sheng, Evelyn Yu, Howan Leung, Kwok-kwong Lau, Patrick Kwan

12:45 – 14:00 Lunch

14:00 – 14:15 Opening Ceremony

14:15 – 15:30 **Symposium On Neuromuscular Disorders**

Chairpersons: *Y. W. Chan, Leonard Li*

Differential Diagnosis of Facial Weakness

Jun Kimura

Paraneoplastic Peripheral Neuropathy

Koon-ho Chan

15:30 – 15:45 Coffee Break / Poster Viewing

15:45 – 17:00 **Janssen's Symposium On Migraine**

Chairpersons: *M. C. Kwan, Patrick C. K. Li*

Epidemiology of Headache in Asia

Shuu-jiun Wang

Migraine Assessment for Prophylaxis (MAP) in Hong Kong: a Multicentre Study

Raymond T. F. Cheung, for Investigators of MAP Study in Hong Kong

30 October 2005, Sunday

09:00 – 09:15 **Registration**

09:15 – 10:45 **Symposium On Multiple Sclerosis**

Chairpersons: *C. T. Tan, Y. L. Yu*

MRI and Diagnostic Criteria in Multiple Sclerosis
K. Y. Mok

Interferon Treatment for Relapsing-remitting Type Multiple Sclerosis in Hong Kong
K. K. Lau

Update on Management of Multiple Sclerosis
C. T. Tan

10:45 – 11:00 Coffee Break / Poster Viewing

11:00 – 12:50 **Pfizer's Symposium On Epilepsy**

Chairpersons: *Patrick Kwan, Jason Fong*

New Antiepileptic Drugs in the Treatment of Epilepsy
Emilio Perucca

Mortality of Epilepsy—a Retrospective Cohort Analysis in Hong Kong
Colin H. T. Lui, Patrick Kwan, Virginia Wong, Jonas H. M. Yeung

Epilepsy Surgery in Hong Kong: Audit from a Regional Centre
Patrick Kwan, Joseph M. K. Lam, Andrew C. F. Hui, X. L. Zhu

Epilepsy Surgery in Hong Kong: Special Cases
K. Y. Yam

12:50 – 14:00 Lunch

14:00 – 15:20 **Symposium on Stroke**

Chairpersons: *Raymond Cheung, C. Y. Huang*

Less Common Causes of Stroke
Chuan-zhen Lu

Emerging Therapies for Intracranial Atherosclerosis
Lawrence K. S. Wong

15:20 – 15:35 Coffee Break / Poster Viewing

15:35 – 17:00 **Symposium on Current Neurology**

Chairpersons: *Edmund Woo, T. H. Tsoi*

Neurogenetics
Richard Kay

Parkinson's Disease: an Update on Genetics, Pathogenesis and Therapeutics
Jonas Yeung

Update on Neurorehabilitation
Leonard S. W. Li

D 1

Clinical Relevance of Initial High Blood Pressure in Acute Intracerebral Haemorrhage

Tat-sun Cheng
Queen Mary Hospital, Hong Kong

Background
Compared to other western countries, Hong Kong has a higher rate of intracerebral haemorrhage (ICH). Elevated blood pressure (BP) is commonly seen during the acute phase of ICH. Optimal management of high BP in acute ICH is unknown. This study is aimed to investigate the factors associated with initial high blood pressure (IHBP) in the acute ICH and the relationship between IHBP and the clinical outcomes.

Methods
We prospectively identified all patients admitted to a regional hospital with acute spontaneous ICH between January 2003 and December 2003. IHBP was defined by a systolic BP of ≥180 mm Hg and/or a diastolic BP of ≥105 mm Hg and/or a mean BP of ≥130 mm Hg on 2 or more occasions at least 10 minutes apart. Relevant clinical data were recorded for analysis.

Results
A total of 148 patients were recruited. IHBP was found in 98 patients (66.2%). Comparing between patients with IHBP and those without, statistically significant difference was observed in the Glasgow Coma Scale (P=0.001), National Institutes of Health Stroke Scale (P<0.001), ICH volume (P=0.009), pre-existing hypertension (P=0.027), and time of presentation to the hospital (P=0.007). In multivariate analysis, only the time of presentation was the independent predictor. Patients with IHBP had a statistically significant increase in the 30-day mortality (P=0.007) and 3-month mortality (P=0.008) as well as an increase in the 30-day disability (P=0.022) and 3-month disability (P=0.023). However, the correlation between IHBP and mortality or disability became insignificant when controlling for the associated factors. About 40% of the patients with IHBP had their high BP subsided within the first 24 hours, and this was associated with a significantly lower 30-day disability (P=0.006) and 3-month disability (P=0.017).

Conclusions
IHBP in acute ICH is related to a poor neurological state, a large volume of ICH, pre-existing hypertension, and an early time of presentation. It may be a prognostic indicator for the mortality and the disability, but not an independent predictor. The finding that IHBP patients with their BP settled early have a lower disability may provide an insight on how to control the BP during acute ICH.

C-Reactive Protein after Acute Ischaemic Stroke

D 2

Ka-wing Fong
Department of Medicine, Queen Elizabeth Hospital, Hong Kong

Background and purpose
C-Reactive protein (CRP), an inflammatory marker, predicts the outcome of cardiovascular disease both in hospital and population-based studies. However, there are relatively few studies focusing on CRP in acute ischaemic stroke. This study was to examine the prognostic value of CRP after acute ischaemic stroke in Chinese patients.

Methods
This was a prospective study of patients who were admitted to a regional hospital for acute ischaemic stroke within 24 hours of symptom onset, during the period from 1 October 2003 to 31 March 2004. CRP, fibrinogen, C3 level, white blood cell count (WBC), and erythrocyte sedimentation rate (ESR) were taken within 24 hours of symptom onset. The patients were followed up at 90 days for assessment. The primary end-point was mortality (either vascular or non-vascular death) and the secondary end-point was functional dependence, which was defined as Barthel Index (BI) of <85 or Modified Rankin Scale (MRS) of >3.

Results
87 patients were recruited and stratified into two groups according to the median level of CRP (6 mg/L) on initial presentation. Eleven patients died within 90 days. The probability of death was correlated with the CRP level, being 4% (CRP ≤6 mg/L) versus 23.7% (CRP >6 mg/L) [P=0.01, X^2-test]. Other variables that predicted mortality included age >70 years, fasting blood glucose >7.0 mmol/L, Glasgow Coma Scale (GCS) <15/15, presence of atrial fibrillation, large size of infarct, and presence of cerebral oedema on cranial computed tomography (CT) scan. Only age >70 years and fasting blood glucose >7 mmol/L but not the CRP level were shown to be independent predictor of mortality or poor functional outcome when Cox regression analysis was applied. Higher CRP level also predicted poor functional outcome with 48.3% versus 23.4% of patients having functional dependence (P=0.047, X^2-test). All other inflammatory markers (ESR, WBC, C3, and fibrinogen) failed to show correlation with functional outcome and mortality.

Conclusion
Our study showed that high CRP level within 24 hours of ischaemic stroke correlated significantly with mortality and poor functional outcome at three months. However, we failed to show its independent predictive value on prognosis with Cox regression analysis, probably related to the relatively short duration of follow-up and small sample size.

D 3

Detection of Asymptomatic Diabetic Distal Symmetric Polyneuropathy with Clinical Examination and Nerve Conduction Study in Patients with Non-insulin-dependent Diabetes Mellitus

Herrick Siu-wah Lau
Our Lady of Maryknoll Hospital, Hong Kong

Background
Non-insulin-dependent diabetes mellitus (NIDDM) is highly prevalent in our local population. Yet, local data concerning diabetic neuropathy are lacking. The problem of diabetic neuropathy, of which distal symmetric polyneuropathy comprises the majority, can be sizeable. Hence, the physical and social burden brought forward can be enormous. Since active treatment may improve prognosis of neuropathy, it is crucial to apply accurate diagnostic tool and achieve early detection of neuropathy or individuals at risk.

Methods
80 voluntary NIDDM patients without symptoms of neuropathy were examined for evidence suggestive of peripheral neuropathy using standard clinical examination tools and nerve conduction study (NCS). Risk factors possibly associated with neuropathy were evaluated. Accuracy of the two methods were compared and discussed. A control sample served as normal references for NCS parameters.

Results
Clinical examination identified abnormality in 5% patients. It showed high specificity when compared with NCS, which revealed abnormality suggestive of polyneuropathy in 23.8%. High HbA1c level ($P<0.001$) and presence of nephropathy ($P=0.011$) are independent risk factors for neuropathy. Abnormalities of lower limb NCS parameters and minimum F-latency are the most consistent findings in patients with abnormal NCS. Delay of tibial F-latency is observed in a significant proportion (13.1%) even in diabetic subjects with normal standard NCS findings.

Conclusion
A significant proportion of asymptomatic prevalent NIDDM patients already have neuropathy detectable at neurophysiological level. There is no good consensus as to accuracy of clinical examination in diagnosis of neuropathy. Clinical foot examination including monofilament tests on dorsum and plantar aspect of feet, vibration threshold at big toes measured with neurothesiometer and ankle reflexes may not provide sufficient sensitivity for neuropathy screening in certain patients. NCS may be supplemented to routine foot examination for this purpose in patients at high risk for development of neuropathy. F-latency should be valuable parameter to be assessed in all diabetics with suspicion of early neuropathy.

D 4

Subclinical Borderzone Infarctions and Premature Strokes in Hereditary Protein S Deficiency: Identification of a New *PROS1* Mutation and Homogeneous Infarct Topography

Thomas Wai-hong Leung
Division of Neurology, Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong

Background
Protein S (PS) is an important regulatory protein in coagulation cascade and PS deficiency (PSD) is an independent risk factor for venous thromboembolism. However, the role of PSD in ischaemic stroke has been controversial as the clinical manifestations in previous reports were heterogeneous and potentially confounded by co-existing hereditary or acquired factors. Moreover, the association was based principally on clinical and biochemical descriptions, and rarely with genotypic or infarct topographic correlation.

Methods
In a pedigree of young strokes with hereditary PSD identified as a tight co-segregating factor, we correlated the biochemical, genotypic, and radiological findings.

Results
Three out of 11 family members had a history of premature stroke at their early forties. Six members including all 3 with premature strokes were found to have PSD type III phenotype. Polymerase chain reaction and sequencing on all exons of PS gene (*PROS1*) identified a novel mis-sense mutation in exon 10 resulting in Arginine 314→Cysteine (R314C). The mutation co-segregated fully with the PSD phenotype. Subcortical white matter infarctions along bilateral external and internal borderzones were consistently revealed in cranial magnetic resonance imaging (MRI) of all 5 PSD adult members (including the 2 asymptomatic PSD members). MRI was normal in non-PSD members and the youngest PSD member (aged 13 years).

Conclusion
The novel *PROS1* R314C mutation is most likely a causative mutation leading to PSD type III. The homogeneous infarct topography indicated a strong association between PSD and borderzone infarctions. The crescendo infarct progression from adolescence into adulthood suggested that a silent evolution of borderzone infarctions from as early as late teenage might have preceded the emergence of stroke in the fifth decade. PSD may cause stroke through disturbing the haemostasis in borderzone; in which, awareness for screening and prevention of stroke is needed.

Homocysteinaemia and Small Vessel Disease

D 5

Eric Ka-shing Liang
Prince of Wales Hospital, Hong Kong

Background and purpose
Many studies had demonstrated that homocysteine is a risk factor for stroke associated with large arterial atherosclerotic diseases. Association between hyperhomocysteinaemia and stroke associated with small vessel disease is less well established. The aim of this study was to investigate the association between homocysteine level and the severity of white matter changes among Chinese patients with stroke associated with small vessel disease.

Methods
Consecutive patients with stroke or TIA with small vessel disease were identified and with their homocysteine level determined. The relationship between hyperhomocysteinaemia and the severity of small vessel disease was being studied.

Results
The volume of white matter change measured in mls was significantly larger in patients with hyperhomocysteinaemia (6.1) as compared with patients without hyperhomocysteinaemia (2.5). However, the number of lacunar infarcts did not differ between the two groups, despite the fact that both white matter changes and lacunar infarcts were both manifestations of small vessel disease.

Conclusion
Hyperhomocysteinaemia is closely associated with the severity of white matter changes in patients with stroke associated with small vessel disease. Lacunar infarcts and white matter changes may be associated with different aetiologies.

D 6

Intracranial Arterial Stenosis in Atherothrombotic Middle Cerebral Artery Territory Infarction of Chinese Patients

Man-wai Lo
Queen Elizabeth Hospital, Hong Kong

Background and purpose
There were diverse topographical stroke patterns and pathogenic mechanism in patients with acute ischaemic stroke with middle cerebral artery (MCA) territory infarction. Unlike the white population, Chinese patients have more intracranial disease than extracranial disease for ischaemic stroke. A prospective study was conducted to examine the arterial pathology and the topographical patterns in patients with atherothrombotic stroke in the MCA territory in local Hong Kong Chinese population. The angiographic appearances of intracranial stenosis were analysed to assess the likelihood of successful angioplasty which might be a potential interventional treatment for patients suffered from recurrent stroke despite the use of antithrombotic medical therapy.

Methods
Between January 2003 and October 2003, 63 consecutive Chinese patients admitted to a community hospital in Hong Kong suspected to have atherothrombotic MCA territory infarct were recruited. MR imaging (T1, T2 and diffusion weighted imaging) and angiography were performed. Cases of cardioembolic stroke were excluded. 51 patients remained in the study after exclusion of ineligible patients. The distribution and degree of steno-occlusive lesions were identified. Logistic regression analysis was performed to look for any predictor of steno-occlusive disease. Topographical stroke patterns were analysed with regard to the underlying steno-occlusive pathologies. MR angiographic appearances of the intracranial stenotic arteries were evaluated according to the likelihood of successful angioplasty.

Results
53% of them had radiological MCA diseases and 20% had extracranial disease. Among the patients with non-lacunar infarct, 61% of them had intracranial diseases and 24% had extracranial diseases. For those with radiological lacunar infarct, 20% had intracranial diseases. None of them had extracranial disease. Hypertension was found to be an independent predictor of intracranial stenosis in logistic regression analysis (OR=5.89; 95% CI, 1.30-26.7; P=0.022). The topographic patterns shown on MRI were subdivided into 5 groups: lacunar infarct (n=10), striatocapsular infarct (n=12), centrum semiovale infarct (n=9), cortical border zone infarct (n=3), and cortical infarct (n=17). As shown in MR angiogram, more than half of the patients (56%; 9 of 16 patients) with stenotic MCA lesions had short, concentric, and non-angulated lesions which were associated with favourable clinical outcome for patients undergone intracranial angioplasty.

Conclusions
Symptomatic intracranial stenosis was present in over half of the patients with MCA territory infarct. MCA steno-occlusive disease was the most important cause of infarction in the MCA territory. It could give rise to lacunar infarction and many other topographical stroke patterns. More than half of the patients with MCA stenosis had short-segment, concentric, and non-angulated angiographic appearance, which might be amenable to intracranial angioplasty.

F1

Microbleeds as an Independent Predictor for Future Intracerebral Haemorrhage in Acute Ischaemic Stroke

Yannie Soo, Lawrence Wong, Songran Yang, Wynnie Lam
Prince of Wales Hospital, Hong Kong

Background
Cerebral microbleeds (MBs), which frequently coexist with intracerebral haemorrhage, can also be detected in ischaemic stroke patients. The goal of our study is to determine whether MBs, detected in acute ischaemic stroke patients, is a risk factor for future intracerebral haemorrhage.

Methods
We recruited a group of patients who were admitted consecutively for acute ischaemic stroke in a general regional hospital. All patient underwent MRI of brain. The presence of MBs and severity of white matter changes (WMC) were evaluated. Patients were followed up for 26.88±15.79 months. The development of recurrent stroke (both haemorrhagic and ischaemic), subsequent myocardial infarction, and death were recorded.

Results
1027 patients were included in this study, with the mean age of 68.38±11.61 years. The mean follow-up period was 26.88±15.79 months. Of 292 patients (28.4%) with MBs, 12 patients (4.1%) developed intracerebral haemorrhage, 45 patients (15.4%) had recurrent ischaemic stroke, and 52 patients (17.8%) died. For the 735 patients (71.6%) without MBs, 4 patients (0.5%) developed intracerebral haemorrhage, 77 patients (10.5%) had recurrent ischaemic stroke, and 81 patients (11.0%) died. Univariate analysis showed that the presence of MBs was associated with further intracerebral haemorrhage (P<0.001), recurrent ischaemic stroke (P=0.031), and death (P=0.005). Whereas, in multivariate analysis, the presence of MBs (6.589, 2.120-20.480, P=0.001) and age (1.085, 1.023-1.151, P=0.007) were independent risk factors for future intracerebral haemorrhage. No significant association was found between presence of MBs with recurrent ischaemic stroke or death.

Conclusion
Presence of MBs, in acute ischemic stroke patients, is an independent predictor for future intracerebral haemorrhage.

F 2

In-patient Carotid Ultrasound Screening Performed by Physicians for Patients with Ischaemic Stroke—a Pilot Program in a Regional Hospital

Tak-sun Tse, Chi-nam Lee, Ka-lock Shiu, Sonny Fong-kwong Hon, Tak-hong Tsoi
Pamela Youde Nethersole Eastern Hospital, Hong Kong

Background
Screening for extracranial carotid artery disease (ECCAD) is useful in management of acute ischaemic stroke. In view of the long waiting list of carotid duplex ultrasound (CUS) in Pamela Youde Nethersole Eastern Hospital, medical CUS screening program was established since September 2002, conducted by a team and led by a cardiologist, together with two neurology team members.

Purposes
1. To assess the accuracy of the CUS screening performed under this program.
2. To assess the prevalence of ECCAD in this cohort of patients.

Methods
All patients with ischaemic stroke having CUS screening under this program from September 2002 to August 2005 were retrospectively reviewed. US findings were correlated with any confirmatory test including formal CUS, CT angiogram (CTA), and MR angiogram (MRA) if performed.

Results
281 patients underwent CUS screening in 2.9±2.3 days after index admission. 43 (15%) had abnormal or positive results: internal carotid artery (ICA) total occlusion in 10 cases, near total occlusion in 1 case, 70-90% stenosis in 17 cases, 50-69% in 12 cases, abnormal or inconclusive results in 3 cases.

4 patients received treatment with low-molecular-weight heparin in view of US finding. Among the 43 patients with abnormal CUS, CTA were performed in 22. The findings of US were verified in all patients except 2, in which screening US over-estimated the severity of stenosis. Among 238 patients with negative US, 25 had confirmatory tests performed. No patients showed significant ECCAD. 15 (6%) of these 238 patients had recurrent ipsilateral ischaemic stroke during median FU of 16 months (4.7% per year).

Conclusions
1. Significant ECCAD is common in Chinese patients with ischaemic stroke.
2. CUS screening performed by physicians with special training is highly accurate with high positive and negative predictive value.
3. In-patient CUS screening program facilitated management of patients with ischaemic stroke.

Safety and Performance of the Wingspan Stent System in Patients with Recurrent Stroke Attributable to Intracranial Atherosclerotic Disease

F 3

Wai-man Lui
The University of Hong Kong, Queen Mary Hospital, Hong Kong

Background
Intracranial atherosclerotic disease causes approximately 8-10% of ischaemic strokes. The stroke risk in patients with intracranial atherosclerotic disease ranges from 7 to 24% per year. Current pharmacologic therapies for secondary prevention include antiplatelets, anticoagulants, and cholesterol-lowering agents. Patients who fail drug therapy are at even higher risk for subsequent strokes. For these drug refractory patients, endovascular therapies such as angioplasty and stenting may represent a promising treatment option.

Methods
This is an international prospective, single-arm, multicentre, safety study with 6 months' follow-up. Patients with recurrent stroke attributable to atherosclerotic disease refractory to medical therapy in intracranial vessels ranging from 2.0 to 4.5 mm in diameter with ≥50% stenosis were recruited. Angioplasty plus stenting were performed and patients were followed up for 6 months. The stroke risk and degree of arterial stenosis were assessed.

Results
45 patients were enrolled. 44 patients were treated with the Wingspan™ System. One patient's lesion could not be accessed with the guidewire and could not be treated. Stent success rate was 100%. All intracranial stenosis was treated with target lesions of <50% post-stent. There was no stent-related complication. One patient had recurrent stroke and died within 30 days after procedure. 43 patients were included in the 6-month clinical analysis. 30-day ipsilateral stroke or death rate was 4.4% (2/45). Six-month ipsilateral stroke or death rate was 7.0% (3/43). There was no symptomatic restenosis at 6 months' follow-up. Three of 43 patients had restenosis but no patient required re-treatment.

Conclusion
In symptomatic patients with high-grade intracranial atherosclerotic disease who fail antithrombotic therapy more than once, intracranial angioplasty followed by deployment of the Wingspan self-expanding stent may be a treatment option.

Topiramate for Migraine Prevention: a Prospective Observational Study

F 4

Terrance Ho-lun Li[1], Andrew Hui[2], Bun Sheng[1], Evelyn Yu[2], Howan Leung[2], Kwok-kwong Lau[1], Patrick Kwan[2]
[1] Princess Margaret Hospital, Hong Kong
[2] Prince of Wales Hospital, Hong Kong

Background
Randomised placebo controlled trials (MIGR-001 and MIGR-002) and comparative trial (MIGR-003) showed that topiramate is effective as preventive therapy for migraine with similar efficacy as propranolol. We would like to explore the efficacy and safety of topiramate in this aspect of our local population.

Methods
This was a 12-week prospective observational study. Patient with episodic migraine, with or without aura, according to IHS classification were recruited. Topiramate was titrated by 25 mg/week to a maximum of 200 mg daily or as tolerated. Those with migraine <2/month were excluded. Efficacy was assessed under intention-to-treat analysis (ITT) by a reduction in mean monthly migraine frequency and migraine intensity which was measured by a visual analogue scale (VAS).

Results
52 patients were enrolled. The baseline age, migraine frequency/month, and VAS were 41.8±9.1 years, 8.5±7.8, and 76.5±19.2, respectively. The mean migraine frequency/month decreased from 8.5 to 6.4 (P<0.001) and VAS decreased from 76.5 to 58.0 (P<0.001) at the end of the study. The responder rate (>50% reduction in monthly migraine frequency) was 52.9%. There was no statistically significant difference in baseline migraine frequency or in VAS between responders and non-responders. Among all the patients enrolled, the most common adverse effect was paresthesia (46.2%). Others including somnolence, short-term memory impairment, and worsening of migraine. Among those who developed adverse effects, only 16.7% of them withdrew from the study. The mean daily dosage of topiramate in the last 4 weeks before endpoint was 79.3 mg daily (SD, 35.6 mg).

Conclusion
Topiramate is an effective agent for migraine prevention. Despite using comparatively lower dose, responder rate in our local population was similar to MIG-001 and MIG-002, which is 54% and 49%, respectively.

Differential Diagnosis of Facial Weakness

S I-1

Jun Kimura
Division of Clinical Electrophysiology, Department of Neurology, University of Iowa, United States of America

Isolated facial weakness usually develops in patients with either a contralateral hemispheric lesion or a disease of the facial nerve per se, although disorders of the neuromuscular junction or muscle could also affect the cranial muscles more or less selectively. The presence of sensory symptoms usually indicates a central type of weakness, which characteristically involves the lower part of the face, sparing the frontalis and orbicularis oculi, which are maintained by the intact uncrossed pathway. The opposite does not necessarily hold because sensory disturbances may not accompany some systemic diseases such as amyotrophic lateral sclerosis (ALS) multifocal motor neuropathy. Also, a stroke may spare the sensory cortex, giving rise to a pure motor deficit, which may predominate in the face.

Weakness of the orbicularis oculi and frontalis usually distinguishes a peripheral from central facial palsy. This differentiation, however, is not always easy because of variability in the innervation pattern. In equivocal cases, an increased latency of electrically elicited R1 will confirm that the lesion involves the facial nerve. The latency of R1 may increase during an acute stage of contralateral hemispheric lesions especially if it is elicited by the glabellar tap. In doubtful cases, paired stimuli minimise the supranuclear effect of reduced excitability to make the shortest latency of R1 a more accurate measure of conduction along the reflex arc itself. The excitability of R2 may show significant alteration with hemispheric lesion, showing either an afferent or efferent pattern.

The facial nerve is commonly affected during a course of polyneuropathy such as the Guillain-Barré syndrome, HIV infection, Lyme borreliosis, and hereditary motor and sensory neuropathy type I. Patients with the acquired demyelinative neuropathy usually have prominent facial paresis, whereas those with the hereditary neuropathy have minimal signs and symptoms in the face despite marked delay in conduction. Weakness usually occurs as the consequence of conduction block that typically accompanies acute, fulminating demyelination but not chronic insidious process because slow progression allows compensation of motor function to occur. Diabetic patients who develop a facial palsy tend to have a more severe paresis and the evidence of substantial denervation. Peripheral facial paresis secondary to herpes zoster infection also carries a less favourable prognosis. Patients with Bannwarth's syndrome may develop unilateral or bilateral facial palsy as part of multiple mononeuritis associated with erythema, pain, elevated cerebrospinal fluid protein and pleocytosis.

Peripheral type of facial paresis also results from lesions of the facial nerve along the extra-axial course or as the sole manifestation of brainstem pathology, involving the facial nucleus or its intra-axial pathway. Acoustic neuroma and multiple sclerosis deserve special mention regarding involvement of the facial nerve. The tumour, strategically located at the cerebellopontine angle, may compress not only the facial nerve, but also the trigeminal nerve and the pons; that is the efferent, afferent, and central arcs of the blink reflex. Thus, the electrically elicited blink reflex shows abnormality in a majority of patients. Peripheral facial palsy may herald other symptoms of multiple sclerosis in young adults. Myokymic discharges, although characteristic of demyelination, may also appear in other conditions such as pontine glioma, subarachnoid haemorrhage and ALS. The blink reflex study may show an absent or delayed R1, indicating demyelination of the central reflex arc, which includes the intrapontine portion of the facial nerve.

The same principles apply to the electromyographic examination of the facial and limb muscles. In the face, however, physiologically small motor unit potentials may mimic fibrillation potentials. The signs of denervation appear early in less than 3 weeks following injury, presumably reflecting the short nerve length. Serial electrodiagnostic studies help delineate the course of the illness. The amplitude of the direct response elicited by stimulation of the facial nerve after the fourth to fifth day of onset serves as the best means predicting the eventual outcome of recovery. An amplitude greater than one half of the control value on the normal side indicates a good prognosis, although late degeneration can still occur. Preservation or return of Rl or R2 of the blink reflex also offers reasonable assurance that the remaining axons will survive, leading to a satisfactory return of function. Following facial nerve degeneration, autogenous grafting may give good functional recovery, although commonly associated with synkinesis and contracture.

Sporadic cases of Bell's palsy rank the first in incidence of peripheral facial palsy. The aetiology remains unknown, but swelling and hyperemia in the intraosseous portion of the facial nerve suggests a focal pathology during the acute stage. Accumulating evidence suggests reactivation of herpes simplex virus type I (HSV-1) at least in some cases, providing a rational for antiviral therapy with acyclovir. Patients with a rare familial type may suffer from recurrent episodes, which tend to leave increasing residual weakness following each attack. Paralysis of the upper and lower portion of the face develops suddenly often associated with pain behind the ear. Additional features

may include loss of taste in the anterior two thirds of the tongue and hyperacusis on the affected side. At least 80% of patients improve quickly without specific therapy. A complete recovery follows a demyelinative form, whereas functions return slowly and poorly after degeneration of the facial nerve. Synkinesis nearly always develops with regeneration. Patients may complain of sensory symptoms in the trigeminal distribution in an otherwise typical case of Bell's palsy.

Serial electrodiagnostic studies help delineate the course of the illness. The amplitude of the direct response elicited by stimulation of the facial nerve provides the best means for prognosis after the fourth to fifth day of onset. An amplitude greater than one half of the control value on the normal side indicates a good prognosis, although late degeneration can still occur. If either R1 or R2 of the blink reflex is preserved or previously absent reflexes return while the direct response remains normal, or nearly normal, the patient will almost certainly recover completely. Thus, the presence of R1 or R2 offers a reasonable assurance that the remaining axons will survive without undergoing further deterioration. Unfortunately the reflex rarely recovers during the first few days after onset. In a series of 56 patients who recovered without distal degeneration, the reflex reappeared by the latter half of the first week in 57%, by the second week in 67%, and by the third week in 89%. Other signs for good prognosis include incomplete clinical paresis and the presence of voluntary motor unit potentials in electromyography.

In the absence of substantial nerve degeneration, the latency of the direct response remains unaltered throughout the course on the affected side. In these patients, however, the latency of R1 of the blink reflex, if present, shows a mild delay during the first few days, further increases during the latter half of the first week, which remains essentially unchanged up to the fourth week. It then shows a notable recovery during the second month, returning to a normal range during the third or fourth month. These findings suggest that most patients with Bell's palsy, which develop little axonal degeneration, suffer from a focal demyelination of the facial nerve. If the facial nerve shows substantial degeneration, the ultimate recovery depends on the completeness of regeneration. This process generally takes a few months to a few years, resulting almost always in an aberrant reinnervation.

Paraneoplastic Peripheral Neuropathy

S I-2

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Paraneoplastic neurologic disorders (PND) are due to immune-mediated damage to the nervous system. Sensory neuronopathy, sensory and sensorimotor polyneuropathy are common PND affecting the peripheral nervous system associated with solid tumours, mostly common small cell lung carcinoma seropositive for anti-Hu antibody (also known as anti-neuronal nuclear antibody type 1 [ANNA-1]). Pathologically, sensory neuronopathy was characterised by dorsal root ganglionitis with lymphocytic infiltration causing active neuronophagia and ganglion cell degeneration. Paraneoplastic acute demyelinating polyradiculoneuropathy compatible with Guillain-Barré syndrome (GBS) had been reported to be associated with B-cell acute lymphoblastic leukaemia, Hodgkin's lymphoma, Burkitt's lymphoma, B-cell non-Hodgkin's lymphoma (NHL), and renal differentiated clear cell carcinoma. Paraneoplastic chronic inflammatory demyelinating polyneuropathy (CIDP) was reported to occur in cutaneous T cell lymphoma, B-cell lymphomas and cecal diffuse large cell lymphoma.

Early tumour-ablative therapies are probably the most important treatment for PND. Specific immunomodulatory therapies such as systemic corticosteroids, other immunosuppressants such as cyclophosphamide, and intravenous immunoglobulins (IVIG) were reported efficacious in case reports and small case series especially in patients with involvement restricted to the peripheral nervous system. Clear guidelines are not available due to lack of large-scale randomised control trials. A study of PND patients treated with a regimen consisting of IVIG plus cyclophosphamide and methylprednisolone concluded that immunomodulatory therapy in severely disabled patients was ineffective. Recognition and prompt diagnosis of PND including paraneoplastic peripheral neuropathy facilitate earlier detection of underlying malignancy. Early tumour-ablative treatments with/without immunomodulatory therapies may be followed by neurological improvement.

Epidemiology of Headache in Asia

S II-1

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Various studies have raised the issue that Asians have a much lower prevalence of migraine than westerners. The recent epidemiologic studies of headache in Asia based on the classification criteria of the International Classification of Headache Disorders (both ICHD I and II) were reviewed.

Apart from a Korean study and the first Hong Kong study in 1992, the 1-year prevalence of migraine in Asia has been quite consistent, ranging from 6.0 to 12.7%. The sex-specific migraine prevalence ranges from 9.1 to 14.4% in women and 2.3 to 6.7% in men. The prevalence of ICHD tension-type headache has also shown similar rates among these studies (14.7 to 25.7%). The consistency of the prevalence of migraine and tension-type headache among these Asian countries is interesting in a region where the cultural background and development are so diverse. These ICHD migraine surveys show that migraine is a significant disease in Asia and that its prevalence is close to but in the low range of those reported in the western countries.

In addition to its prevalence, migraine has had a significant negative impact on health-related quality of life; however, in some Asian countries, migraineurs seldom consult physicians. In addition, a multi-national survey (Migraine Disability Awareness Campaign in Asia: Migraine Assessment for Prophylaxis [MAP]) for migraine in neurology clinics in eight Asian countries is updated. For now, 2573 patients (1844 female and 729 male; mean age, 37.8±15.1 years) have been recruited. On average, these participants had 3.9 severe headaches per month, and 57.8% of them missed school, work or household chores. Migraine was diagnosed in 44.4% prior to the consultation. From the physicians' survey, 68.2% of the patients were diagnosed to have migraine. Most (75.7%) of the patients were taking medications for acute headache treatment; among them, 13.5% overused medications. Emergency room attendance was shown in 29.7% of the patients. Only 22.0% were on prophylactic medications. Among patients not on prophylactic treatment, the neurologists would recommend pharmacological prophylaxis in 57.1% of them. The first cooperative study showed that migraine is the most common headache diagnosis in neurological services in Asia. A majority of the patients have migraine-related disability. Migraine remains underdiagnosed and undertreated in this region.

In addition to the discussions on migraine, findings of research being done on chronic daily headache and cluster headache in this region are presented. The prevalence of chronic daily headache in Taiwan was similar to those of western countries (approximately 4%). Of note, we found 1.5% adolescents aged 13 to 15 years also suffered from chronic daily headache. One report of cluster headache done in Taiwan showed that, compared with western societies, patients with chronic cluster headache were very rare and the frequency of restlessness was much lower in Taiwanese cluster patients. An interesting headache syndrome—bathing headache—is presented. The case reports are exclusively Asians.

This review and discussion demonstrate that geographic or ethnic diversity of migraine could indeed be downplayed if researchers would employ similar epidemiologic methodology and identical case definition in headache surveys in different regions of the world.

Migraine Assessment for Prophylaxis (MAP) in Hong Kong: a Multicentre Study

S II-2

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Background
A multi-national survey of the headache diagnoses and consequences among out-patients attending neurological services has recently been conducted in eight Asian countries. In Hong Kong, 7 of 12 acute hospitals with neurology services participated in the MAP Study. We aimed to describe the clinical characteristics and headache features of our patients and compare between the new referrals and existing patients.

Methods
MAP Study in Asia recruited out-patients who consulted neurology services for the first time with a chief complaint of headache. Patients suffering from headache for more than 15 days/month were excluded. Patients answered a self-administered questionnaire, and their physicians independently completed another questionnaire. Unlike MAP Study in Asia, investigators of MAP in Hong Kong also recruited existing out-patients with headache as the principal diagnosis. Their clinical characteristics and headache features were summarised, and comparisons were made between the new referrals and existing patients.

Results
Preliminary results were available from 216 patients (35 [16.2%] new referrals; 82.3% females; 77.1% had secondary or higher level of education; mean age, 41.8 [SD, 11.9] years). On average, they had 7.4 [SD, 7.6] severe headaches per month, 81.7% of them missed family, social, or leisure activities in the past year, and 82.3% missed school, work, or household chores in the past year. The median point on the visual analogue scale of pain was 8 out of 10. According to the physicians, 85% of them had migraine. When the criteria of the International Classification of Headache Disorders (ICHD), Second Edition, were applied, 71.8% and 12.9% had migraine and probable migraine, respectively. Agreement between the physicians' diagnosis of migraine and the ICHD criteria was about 95%. When compared with new referrals, existing migraine patients did not differ in terms of age, sex ratio, educational level, number of severe headaches per month, and the median point on the visual analogue scale of pain. Although a greater proportion of existing migraine patients were on prophylactic medications (67.7% vs 36%) when compared with new referrals, missing family/social/leisure activities and school/work/household chores were encountered more often in the existing migraine patients (88.5% and 90.5% vs 72% and 72%, respectively).

Conclusion
Migraine is the most common headache diagnosis among neurology services in Hong Kong. Despite the use of abortive and prophylactic treatment, a great majority of the patients have migraine-related disability. More effective prophylactic treatment should be considered or explored.

MRI and Diagnostic Criteria in Multiple Sclerosis

S III-1

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Historical development

In 1868, Charcot described the classical form of multiple sclerosis. Thereafter, neurologists attempted to make early diagnosis with various classifications. The first widely accepted classification was published in 1965, with the panel leaded by George Schumacher. Both disseminated in time and space as the salient features of multiple sclerosis were first clearly stated in the diagnostic criteria. Lack of specific tests for diagnosis was also pointed out.

Poser criteria

Further advancement came when Poser published the new criteria in 1982, incorporating the newer imaging, electrophysiology techniques, and immunological analysis of the cerebrospinal fluid. He also gave better definitions of terms like attack, historical account, and remission.

McDonald criteria

In 1980s to 1990s, with the advancement of magnetic resonance imaging (MRI) techniques and its gaining availability, MRI becomes a crucial part in the management of multiple sclerosis in clinical practice. Incorporating these data, McDonald criteria were published in 2001. This aimed at providing diagnostic criteria that could be used by practising clinicians. Besides, this is the first attempt to give the diagnostic criteria to primary progressive multiple sclerosis.

After the McDonald criteria were published, there are series that attempted to use the criteria to diagnose multiple sclerosis and compare with the Poser criteria. There are also studies to apply the criteria to clinically isolated syndromes (CIS). Because of these studies and critics, there are ongoing discussions on the modification of the McDonald criteria.

S III-2

Interferon Treatment for Relapsing-remitting Type Multiple Sclerosis in Hong Kong

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The multiple sclerosis (MS) patients in Asia have a much lower prevalence, slightly higher female to male ratio, more frequent spinal involvement, and long spinal cord lesion. Recently the effectiveness of interferon beta-1b (IFNB-1b) has been proven among Japanese MS patients. This study is encouraging since it provides evidence that Asian MS can respond to IFNB. However there are still queries to be answered. Firstly, Japan is on a higher altitude than the South East Asia. From other evidence they report to have a higher prevalence. Secondly, the patients were given IFNB-1b, and we do not know the response to other types of IFNB. Is the evidence from this study strong enough to reassure our MS patients that they will respond as faithfully as the western MS?

We studied the response of relapsing-remitting (RR) type MS in Hong Kong after they received at least 24 months of IFNB. Between 2002 and 2004, 27 RR-type MS were recruited. All patients had been under a specific charity programme. Under this programme, the MS patient had to be assessed by two designated neurologists separately and the results were audited. The assessment and reassessment had to be repeated yearly. Data of 27 MS patients were collected and 15 of them have magnetic resonance imaging (MRI) done both before and after 24 months of IFNB treatment. Their mean age of symptom onset was 27.81 years and their mean age of starting IFNB was 30.44 years. Their mean duration of disease was 64 months. Before IFNB treatment, the mean number of relapses per year, mean Expanded Disability Status Scale (EDSS), and mean duration of hospitalisation were 2.48 per year, 2.333, and 17.41 days. After 24 months, they were 1.74 (P=0.039), 3.296 (P=0.001), and 20.96 days (P=0.095).

When their first MRI is compared with the second MRI, the mean T1-gadolinium-enhanced lesions, T2-weighted lesions, infratentorial lesions, periventricular lesions, and cerebellar lesions have decreased from: 3.00, 48.85, 1.69, 29.23, and 0.85 to 2.77, 42.54, 1.15, 26.15, and 0.54, respectively. However the mean juxtacortical lesions and spinal cord lesions have increased from 18.85 and 0.85 to 19.92 and 1.00, respectively. All these changes of figures have not reached any statistical significance. Brainstem lesions remained unchanged.

The decrease of EDSS has to be considered carefully, apart from natural deterioration of disease, the frequent spinal cord and brainstem involvement may be important. In both cases, the lesions are within a confined space and will produce symptoms in most cases. Hence our next question is: whether the dosage of IFNB is enough, and whether higher dosage, or earlier IFNB treatment will be able to give better results. All these can only be answered with a larger sample size and prospective study.

Update on Management of Multiple Sclerosis

S III-3

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In the last decade, there have been renewed interests in neuromyelitis optica (NMO) in the western literature. Some investigators advocate that it is a distinct disease from multiple sclerosis (MS), and that optic-spinal form of Asian MS is a similar disease to NMO. However, severe myelopathy, which is a hallmark of NMO, is common among 'classical' as well as optic-spinal MS among Asians. The effectiveness of interferon beta-1b in reducing relapses in Japanese patients with optic-spinal MS is also against optic-spinal MS as a distinct disease. The diagnosis of MS can also be improved by better appreciation of the varieties of visual and sensory symptoms and signs, paroxysmal tonic spasm, magnetic resonance imaging changes, acute transverse myelopathy and recurrent myelopathy as relatively common presentations among Asians.

Other than steroid, plasmapheresis has been advocated for treatment of severe acute relapses. There are increasing wealth of data confirming the effectiveness of interferon beta-1a and -1b in preventing relapses and improving long-term outcome. High dose, early and frequent use are factors enhancing efficacy of the drugs. There are also data supporting its use in patients with first neurological episode to prevent conversion to MS. Due to cardiac toxicity, the role of mitoxantrone is mainly in patients who failed other therapies. Higher dose of interferon and Campath are some of the other therapeutic approaches on those who fail interferon treatment.

New Antiepileptic Drugs in the Treatment of Epilepsy

S IV-1

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Over one third of patients with epilepsy do not achieve seizure control with older-generation antiepileptic drugs (AEDs), and many patients who do achieve control suffer from adverse effects. In an attempt to overcome these problems, several new-generation AEDs have been introduced in the last 15 years. For some of these compounds, clinical experience is already extensive, while for others information from postmarketing use is still limited. New-generation AEDs differ in the spectrum of efficacy (with lamotrigine, topiramate, levetiracetam, and zonisamide protecting against a wider range of seizures compared with oxcarbazepine, pregabalin and gabapentin), activity in some co-morbid conditions, and tolerability profile. When given to patients with newly diagnosed epilepsy, new-generation AEDs do not produce greater seizure freedom rates than older agents; however, some have advantages in terms of an improved tolerability profile, ease of use, and a lower interaction potential. Partly because of cost considerations, the main indication of new-generation AEDs remains the adjunctive therapy of patients refractory to older agents. In placebo-controlled trials, between 20 and 50% of these patients experience an appreciable seizure reduction on these drugs compared with a response rate of 0-20% among patients given placebo. However, cumulatively, less than 20% of severely refractory patients can be made completely seizure-free by the new AEDs. Overall, the current availability of about 15 AEDs to treat epilepsy is a welcome development because it improves our ability to tailor drug choice to the characteristics of the individual patient. The availability of so many drugs, however, also complicates treatment choices and demands greater knowledge and skills to ensure that each drug is exploited at best for clinical benefit.

Mortality of Epilepsy—a Retrospective Cohort Analysis in Hong Kong

S IV-2

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Little is known about the mortality of epilepsy among Chinese population. We aimed to study the mortality of patients with epilepsy in Hong Kong.

2955 patients (46% female; median age, 35.8 years; age range, 10-95 years) with chronic epilepsy under follow-up at 7 hospitals were included in the Hong Kong Epilepsy Registry collected in 1997. Their personal identification numbers were matched with the death registry to identify those who had died up to 30 June 2004. The standardised mortality ratio (SMR) for all-cause mortality was estimated based on the death rates in Hong Kong from 1997 through 2004 obtained from the Census and Statistics Department and Department of Health. Hospital records, death certificates, and postmortem reports of those who have deceased were retrieved and reviewed.

Total follow-up duration was 19 924 person-years. 254 (8.6%) patients had died up to 30 June 2004. Crude mortality rate over the years ranged from 10.5 to 14.6 per 1000 persons per year. Using the person-years method, the SMR (number of deaths compared to that expected based on the age- and sex-specific mortality rates in the general population) was 2.50 (95% confidence interval, 2.20-2.80). Based on entry in the death certificates, 92.5% deaths were not directly related to epilepsy/seizures, 7.5% were epilepsy-related, including 2.8% possible/probable SUDEP (sudden unexpected death in epilepsy).

The mortality rate of chronic epilepsy patients were 2.5 times higher than that of the general population. Verification of causes of death and risk factors of death through review of case records and postmortem reports is underway.

Epilepsy Surgery in Hong Kong: Audit from a Regional Centre

S IV-3

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Epilepsy surgery is an effective treatment modality for selected patients with medically intractable epilepsy. We report the outcome of epilepsy surgery performed at the Prince of Wales Hospital.

Patients with refractory localisation-related epilepsies despite treatment with two appropriate antiepileptic drugs were evaluated for suitability of epilepsy surgery. Presurgical evaluation included clinical assessment, long-term video-EEG monitoring, high-resolution brain MRI, psychological review of cognitive, memory and language functions. Functional imaging (SPECT and PET) and intracarotid amobarbital testing were performed in selected patients. Surgery was performed in patients with convergent data. Outcome in patients with at least 6 months follow-up was evaluated according to Engel's classification.

46 patients (65% female) with medically intractable epilepsy underwent surgery between 1997 and April 2005. Median age at operation was 23 years (range, 1-44 years). All patients had structural abnormality on brain MRI. 21 patients with mesial temporal sclerosis underwent either anterior temporal lobectomy with hippocampectomy (n=16) or selective amygdalohippocampectomy (n=5). 23 patients with space-occupying lesions had lesionectomy (14 in temporal lobe), and 2 patients with diffuse hemispheric pathology received hemispherectomy/hemispherotomy. 61% of patients were free from disabling seizures (43% free from any seizure) postoperatively. There was no mortality, and only one patient had significant neurological morbidity.

Epilepsy surgery is safe and effective for selected patients with medically intractable epilepsy. Results of epilepsy surgery from our hospital are similar to those from other centres worldwide. However, epilepsy surgery remains underused, the possible reasons of which will be discussed.

Less Common Causes of Stroke

S V-1

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Stroke is the second cause of death in China. There are about 200 million people suffering from new stroke each year. Hypertension, diabetes, heavy smoking and drinking are the main causes of stroke at the moment in China. However we should pay more attention to the other causes of stroke, such as the inflammatory disorders. We report 23 patients with stroke caused by various inflammatory disorders in the Department of Neurology, Hua Shan Hospital since 2001. Of them, 4 patients had Moyamoya disease, 6 had tuberculous meningitis, 2 had chicken pox, 4 had neuro-syphilis meningitis, 2 had sinus infections, 1 had encephalitis with zoster virus infection, 1 had connective tissue disorder, 2 had post-traumatic infections, and one had calcification. The clinical diagnosis, treatment, and results will be introduced a bit more in detail.

Emerging Therapies for Intracranial Atherosclerosis

S V-2

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The pathophysiology of stroke in patients with intracranial stenosis is now better understood with the availability of technologies such as microembolic signals detection by transcranial Doppler and diffusion-weighted magnetic resonance imaging. Unlike cardioembolism, artery-to-artery embolism tends to produce small subcortical infarcts and occur frequently during the acute phase. Small infarcts are commonly located at borderzone areas where perfusion pressure is insufficient to clear a trapped embolus. The differences in pathophysiology may explain the observed favourable effect of anticoagulation in the treatment of acute stroke among Asians. The recently completed FISS-tris study confirmed that Asians may respond differently to low-molecular-weight heparin treatment because of the underlying intracranial atherosclerosis.

Despite the use of routine medical treatment, patients with intracranial atherosclerosis are at very high risk of stroke. For stroke prevention, use of statin is recommended to stabilise the plaque and prevent further cardiovascular events. Use of warfarin should not be a routine after the publications of the results of the WARSS and WASID studies. Recent interests in the use of dual antiplatelet agents to retard progression should be perused further. Revascularisation using stent is also actively investigated, with 2 stents approved for intracranial use.

Neurogenetics

S VI-1

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Genetic mutations are increasingly recognised as causes of neurologic diseases once thought to be "primary" or idiopathic. Some diseases, like Huntington's or myotonic dystrophy, have characteristic features that made clinical diagnosis relatively straightforward. Others, like the spinocerebellar ataxias or the spinal muscular atrophies, are quite heterogeneous—making it almost impossible to distinguish the hereditary from the "acquired" form of the condition without a clear-cut family history.

Caution must be exercised before ordering genetic tests. First of all, the test can only confirm the presence or absence of certain known mutations—it cannot exclude mutations that are not included in the test battery or those that are not yet discovered. Secondly, although a negative test may be very reassuring, a positive test (or even the thought of it) will be devastating, particularly to patients who have already produced offspring. Thirdly, asymptomatic children must never be tested—nothing is gained except self-fulfilling prophecy.

A number of cases will be shown to illustrate these points.

Parkinson's Disease: an Update on Genetics, Pathogenesis and Therapeutics

S VI-2

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Rapid expansion in knowledge on genetics of Parkinson's disease (PD) has started the revolutionary re-interpretation of its pathogenic processes. The discovery of leucine-rich repeat kinase 2 "LRRK2" (PARK8) with its various mutations makes clinicians to reconsider the contribution of genetic component even in otherwise appear-to-be sporadic levodopa-responsive PD. A recent study of kindreds in Europe, Asia, and North America identified 7 pathogenic coding changes. Although LRRK2 has been implied to have roles in other neurodegenerative diseases, the dardarin G2019S mutation is found to be involved in PD only. This G2019S is the most common form of mutation in LRRK2, its penetrance being age-dependent and its features on positron emission tomography (PET) scan also resemble those of sporadic PD. Whether dardarin plays a part in early or later stage in the pathogenic processes of PD is still controversial.

At cellular level, the Braak's staging of PD indicates that the disease starts at dorsal motor nucleus of vagal nerve, progressing in different phases to eventual neocortical involvement. The vulnerable neurons affected have characteristics of having long, thin axon, with relatively poor myelination or even unmyelinated. Recent pathological data on early involvement of enteric neural plexus have been considered adding further evidence to this theory.

Although newly developed pharmacological therapeutics like A2A antagonist, MAO-B inhibitors, and D2 agonists showed favourable evidence in their efficacy, there is a new trend that multi-target agents are to be developed in order to tackle the wide range of molecular damage once PD becomes symptomatic. As for surgical therapy, apart from deep brain stimulation, human retinal epithelial cells implants are being developed, with preliminary promising results.

Update on Neurorehabilitation

S VI-3

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The advancement in neurorehabilitation has been progressing fast in last decade or so. With the functional electrophysiological, magnetic, and radiological imaging, it achieved a better understanding of the neuroplastic changes in the human brain after injury. In the animal models, studies showed changes in the brain tissues after injury including recruitment of non-used brain cells, change in synaptic potentiation, denervation supersensitivity, changes in dendritic arborizations and collateral sprouting. Even though the early clinical studies and later the meta-analysis on stroke rehabilitation confirmed its effectiveness, it was not until the presence of functional magnetic imaging that provided some additional information to understand what neuroplastic changes occurred in the human brain after stroke rehabilitation. It has been demonstrated that the recruitment of non-used brain cells to take up the lost function would be not only just in the para-injured area, but could also be in different parts of the brain. The recent literatures in this field of neurosciences provide the knowledge in pathophysiological basis for the functional recovery that the clinicians observed. It also provides a means to assess the new intervention in neurorehabilitation on the effect of neuroplasticity.

To have an effect on training up the non-used brain cells, it requires repetitive training. The new techniques in neurorehabilitation such as constrained induced movement therapy, partial weight-supported treadmill training and robotic assisted arm training are the so-called "task-specific training", which will provide multitudes of repetitive training on a similar task that could not be provided by the conventional training. The functional MRI demonstrated neuroplastic changes after such task-specific training. However, there are still on-going clinical research in many different centres to evaluate the usefulness of these new techniques in different clinical settings. Partial weight-supported treadmill training, for example, has been shown in meta-analysis that it could not make those, who could not walk, walk again, but it has the effects of enhancing the gait symmetry and speed of patients with hemiplegia. Combined with the management of spasticity by Botulinum toxin or Phenol motor point block, there is a potential that the task-specific training can provide new dimension to enhance the function of paretic limbs in the selected cases.

Short-term Prognosis after Diagnosis of TIA in a Group of Chinese Patients

P 1

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Background
Recent studies have shown that the incidence of stroke after transient ischaemia attack (TIA) is high. Antiplatelet agents, anticoagulation for atrial fibrillation, and endarterectomy for symptomatic carotid artery stenosis have been proven to be effective after TIA. Rapid evaluation is important in patients with high short-term risk to prevent the disability of stroke. We sought to study the short-term (90 days) risk of stroke and the risk factors among Chinese patients presenting with TIA.

Methods
All TIA patients enrolled in the Pamela Youde Nethersole Eastern Hospital stroke registry from 1 January 2004 to 31 December 2004 were identified. The demographic data and clinical characteristics of TIA were reviewed. The occurrence of stroke within 90 days and the electronic records of each of the patient were retrieved and systematically analysed. Chi-square test and logistic regression analysis were used to test the risk factors associated with stroke after TIA.

Results
A total of 87 TIA patients were identified. Of the 87 cases of TIA, 11 (12.6%) have a definite stroke event within 90 days of TIA. 5 (45.5%) presented within 48 hours of TIA. Histories of smoking, focal weakness, or speech problem on presentation were independently associated with stroke.

Conclusion
Our result indicates that the short-term risk of stroke in patients presenting with TIA is high, particularly in the first 48 hours. Both the characteristics and the clinical features of TIA may be useful for identifying patients who may benefit from expeditious evaluation and aggressive treatment. The development of a score in the future may be possible as a means to assess the short-term risk of stroke in TIA patients.

Adult Moyamoya Disease

P 2

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Background
Moyamoya disease is an uncommon disease entity, especially in adult patients.

Methods
We described a case of possible moyamoya disease in a middle age man.

Results
A 45-year-old man with good past health, presented with sudden-onset right hemiplegics and global aphasia in China. CT brain scan showed acute left MCA infarction. There was no previous cerebrovascular event. Family history was unremarkable.

He attended our unit 1 month later, suspected to have recurrent stroke with mild increased weakness. Examination did not detect new neurological deficit. CT brain scanning was repeated and showed old left MCA infarction. Blood tests (including VDRL, immune marker) were normal. Echocardiogram was normal. Carotid ultrasound revealed minimal atherosclerotic disease.

MRI brain T2 sequence showed large area of infarction over left MCA territory with no signal shown on DWI sequence. MR angiogram showed absent left pMCA branches (M1 and M2), dMCA visible, small segment of marked narrowing over right pMCA, absent left ACA. No evidence of stenosis or dissection over extracranial vessel, except mild weaker flow signal over left VA. DSA showed multiple narrow segments over bilateral ICAs, MCAs and left PCA, with network of collateral vessel, compatible with feature of moyamoya disease. He was put on aspirin 80 mg daily. He remained asymptomatic afterwards.

Conclusion
Our case is atypical to the classical case described in the literature, with first manifestation of ischaemic event in mid-life. Occlusion and major intracranial cerebral vessel could be an acquired condition in later life, due to various inflammatory or infective process. Subsequent neovascularisation could give a pattern similar to the moyamoya disease. Some authors had suggested using 'a systemic disease with angiographic moyamoya' in describing this entity. We suspected the 'moyamoya' pattern on angiogram in this case was secondary to an undiagnosed inflammatory or infective disease acquired in adulthood.

P 3

Medical Intractable Epilepsy: Analysis of Clinical Profile and Outcome of Non-surgical Candidates

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Background
Patients with medical intractable epilepsy will undergo pre-surgical evaluation for possibility of curative surgical resection. However, only some of them will have concordant results for isolated epileptic foci that proved to have good surgical results. For those patients that were not feasible for surgical intervention, less is known about their clinical profile and outcome. In this study, we analyse the clinical profile and the ultimate outcome of a cohort of non-surgical candidates.

Methods
Retrospective review of hospital and clinic records was carried out in Queen Elizabeth Hospital of Hong Kong from 1996 through 2000. Those patients with refractory epilepsy who underwent long-term EEG monitoring for pre-surgical evaluation but finally being rejected were included. We also tried to identify any related clinical parameters and investigation results that could be the predictors for better seizure control.

Results
36 subjects were available for analysis. They were evaluated at a median of 6 years (23-111 months) after the long-term EEG recordings. The main reasons for rejection of surgical treatment included multi-focal or uninformative seizure focus and contradictory results among the radiological and neurophysiological studies. Only 14 (39%) of which the seizure semiology was compatible of temporal lobe epilepsy. 6 (17%) of them had complete seizure freedom and 19 (53%) of them had significant seizure reduction. There was no clinical parameters or investigation results that represent predictors of good seizure control.

Conclusion
A significant portion of patients with medical intractable epilepsy, yet not feasible for surgical intervention, has reasonable good seizure control within the first decade after the pre-surgical evaluation.

P 4

Use of Antithrombotic Agents with History of Intracerebral Haemorrhage (ICH)—Contraindicated? How to Assess the Risk?

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Background
Antithrombotic agents are contraindicated in patients with a history of ICH. In practice, many patients suffer both ICH and ischaemic stroke. No study had addressed the safety of antithrombotic agent after ICH. The treatment dilemma lies in the difficulty in assessing subsequent ICH risk. If there is a way to identify those with high risk of recurrent ICH, antithrombotic agent may then be used in suitable case.

New MRI technology (T2* gradient echo) is able to detect the presence, distribution, and severity of any previous intracerebral haemorrhage. Minor bleeding from damaged vessel can be identifiable as focal signal loss lesions on T2* image (cerebral microbleeds—CMB). The distribution and pattern of CMB may suggest underlying ICH mechanism and recurrent risk.

Methods
We conducted a pilot MRI study to look at the pattern of CMB in patients presented with ischaemic cerebrovascular event with a history of previous ICH. We prospectively recruited patients since January 2005. We excluded patients with ICH due to secondary causes (eg head trauma, brain tumour, AVM, etc) and presumed antithrombotic agent induced ICH. MRI with T2* sequence and MRA were performed in all patients. The severity and the distribution of CMB were recorded.

Results
From January to July 2005, we identified 13 cases. MRI was performed and reviewed in 10 cases (3 cases were scheduled to have MRI). All cases showed evidence of previous ICH. 5 cases had evidence of bleeding only at the previous site of haematoma. 2 cases had few dots of CMBs (2-3) outside side around deep structures (BG, subcortical area, and pons). 3 cases had diffuse CMBs over the brain suggestive of CAA.

Conclusion
Patients presented with ischaemic cerebrovascular event with a history of previous ICH are not uncommon.

Gelastic Seizure and Hypothalamic Hamartoma

P 5

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Background
Children with hypothalamic hamartoma typically present as gelastic seizure in infancy. But the condition is often undiagnosed until the child presents with intractable complex partial seizure or generalised tonic seizure. The seizure is unresponsive to medical treatment. The natural clinical course of disease is progressive, apart from intractable seizure, the patient also suffers from cognitive dysfunction and severe behavioural problems. The surgical treatment of tumour can definitely alter the clinical course of the disease.

Methods
Case report of a 4-year-old child with gelastic seizure and complex partial seizure is presented. MRI brain scan showed hypothalamic hamartoma with surgical excision was done.

Results
The seizure frequency was greatly reduced and the child became less hyperactive and better in behaviour.

Conclusion
The early diagnosis and surgical treatment of epilepsy due to hypothalamic hamartoma can be beneficial to the patient and alter the clinical course of the disease.

Clinical Characteristics and Prognosis of First Provoked Seizure in Adults

P 6

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Background
Seizures can be provoked by a range of conditions which may not be apparent on initial presentation. We aimed to describe the clinical characteristics and prognosis of adult patients presenting with a first provoked seizure.

Methods
We prospectively screened all patients admitted because of suspected seizures within 48 hours of admission using a standard list of diagnostic key words. We took a thorough history from these patients and any witnesses, performed physical examination, and conducted investigations as clinically indicated. As per international guidelines, provoked seizures were defined as those that occurred in close temporal association with an acute CNS or systemic insult. Patients were followed up for 6 months.

Results
Between 1 March 2004 and 1 April 2005, 121 patients were admitted for their first ever seizures. Acute provoking causes not immediately apparent on admission were subsequently identified in 61 patients (61% male; mean age, 55.3 years) who had their first ever provoked seizures. The seizures were generalised in 56% of patients, partial-onset in 41%, and unclassifiable in 3.3%. 28% of patients presented as status epilepticus. 62% of the seizures were provoked by acute CNS insults and 38% by systemic insults. The most common causes identified were acute cerebral infarction and drug/alcohol-related (both 28%). 33% and 10% of patients developed further seizures within 24 hours and 7 days, respectively upon admission, and 5% of the surviving patients had unprovoked seizures within 6 months. 6-month mortality was 28%, independent of the cause of the initial provoked seizure.

Conclusion
Provoked seizures often occur in clusters and are associated with high 6-month mortality.

Diagnostic Utility and Safety of Long-term Video EEG Monitoring

P 7

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Background
Video-EEG monitoring (VEEG) is widely used for the diagnosis and seizure classification of patients with refractory epilepsy. We prospectively evaluated patients who were admitted for long-term VEEG.

Methods
We collected data from consecutive adult patients who were given a diagnosis of refractory epilepsy and put on anti-convulsant therapy from a Neurology Clinic. Pre-admission diagnosis, demographic information, number of ictal events, and presence of adverse events during monitoring and final diagnosis were recorded. Interpretation of EEG events and ictal semiology required consensus of two epileptologists.

Results
100 patients underwent VEEG during a 4-year period. Mean age was 34.8 years (range, 16-88 years). The mean duration was 4.5 days. No clinical or EEG events were recorded in 20 patients but among the remaining, the most common final diagnoses were temporal lobe epilepsy (31%), non-epileptic attack disorders (12%), epilepsy without an exact syndromic diagnosis (17%), frontal lobe epilepsy (9%), and idiopathic generalised epilepsies (6%). Seizure occurred most commonly on the second followed by the third days in the majority of cases and the most frequently observed seizure type was complex partial seizure (39%). No significant injuries or episodes of generalised tonic-clonic status epilepticus occurred during monitoring.

Conclusion
VEEG is safe and has a yield of 80% in detecting paroxysmal events. Before VEEG evaluation, patients can be misdiagnosed or misclassified. Practical alterations in management or confirmation of existing therapy resulted from VEEG assessment.

Use of Traditional Chinese Medicine among Patients with Epilepsy

P 8

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Background
The use of traditional herbal medicine is common in Chinese communities. Its efficacy is however uncertain and side-effects/drug interactions have been reported. This study aimed to determine the prevalence of traditional Chinese medicine (TCM) use in epileptic patients and whether this correlates with demographic, social, or disease-specific characteristics.

Methods
We administered a structured questionnaire, by interview, of consecutive patients with epilepsy in a Neurology clinic. The following were recorded: demographic information (age, sex), social characteristic (income), and disease-specific characteristics (duration of epilepsy, presence of refractory epilepsy).

Results
90 patients were interviewed, including 51 men and 39 women. The mean age was 37 years (range, 21-61 years). 11 patients (12.2%) have taken or were taking TCM at the time of the interview and 23 (25.6%) were non-users. The majority, 56 cases (62.2%) had previously taken TCM intermittently but not for seizure control, eg as tonic, for minor illnesses such as colds and for dermatological conditions. Among the 11 patients who had tried alternative therapy, 3 were actively taken herbal medicine and the rest had tried it but had stopped due to lack of response or costs. No side-effects were reported among users. There was no association between age, income, duration of illness, the presence of refractory epilepsy, and TCM use.

Conclusions
TCM is used by a significant proportion of patients with epilepsy but in the majority of cases, use was short-term and not to treat seizures. Further attention should be directed at improving physicians' and patients' knowledge about the potential benefits, costs, and risks of TCM.