

Professor Raymond Cheung

MBBS, PhD, FHKCP, FHKAM, LMCC, FAHA, FRSM, MRCP, FRCPE, FRCPG, FRCF, FAAN, FESO
Lee Man-Chiu Professor in Neuroscience, HKU
Clinical Professor, Div of Neurology, Dept of Medicine, HKU
Director, Acute Stroke Services, HK West Cluster Hospitals
Honorary Consultant, QMH, TWH & HKSH
Honorary Professor, Dept of Neurology, Sun Yat-Sen University, Guangzhou
Immediate Past President, HK Stroke Society
Past President, HK Neurological Society
Council Member, HK Pain Society
Vice-Chairman, HK Brain Foundation

Stroke Registry in Hong Kong

15 May 2010
International Symposium on Stroke Registry
Chang Gung Healthcare System

Hong Kong

Hong Kong - a Special Administrative Region of China

9.6 millions square km



Hong Kong Special Administrative Region

1,095 square km



Hong Kong Special Administrative Region



Hong Kong Population

- A Special Administrative Region of China
- End 2009: [figures of 1991 in brackets]
 - ❖ Resident population = 6.82 million
 - ❖ Median age = 40 (31) years
 - ❖ M:F = 8.86:10 (10.4:10)
 - ❖ 95% ethnic Chinese
 - ❖ More than primary school education: 74.5% (62)
 - ❖ Professionals/administrative: 33% (23)
 - ❖ Median monthly income: US\$1,280 (660)
 - ❖ Median household income: \$2,240 (1,270)
 - ❖ Mean household size: 3.0 (3.4)
 - ❖ About 70 neurology: 30 in private practice

Census & Statistics Dept, HKSAR

Stroke Registry

Hospital Stroke Registry

- Standardized & prospective collection of important information from stroke patients:
 - ❖ Number of stroke admissions
 - ❖ Types and subtypes of stroke
 - ❖ Age and gender
 - ❖ Stroke onset and delay in admission
 - ❖ Risk factors
 - ❖ Use of antithrombotics
 - ❖ Stroke severity
 - ❖ Laboratory results
 - ❖ Short-term outcome

Early Hospital Stroke Registry

Cerebrovascular Disease in Hong Kong Chinese

C.Y. Huang, MB, BS(HK), FRACP, F.L. Chan, DMRD, FRCR, Y.L. Yu, MD(HK), FRCP(Edin), E. Woo, MB, BS(HK), MRCP(UK), and D. Chin, MB, BS(HK), FRACP

Our prospective study of cerebrovascular disease in Hong Kong confirms a previous clinical impression that stroke in the Chinese has a pattern different from that in Caucasians. We studied 540 patients (aged 20-70 years) with stroke. Computed tomography or autopsy was obtained in 86.1% and showed an increase in the proportion with lacunar infarction, striatocapsular infarction, and parenchymal hemorrhage relative to the frequencies in Caucasians. This increase in the incidence of cerebral hemorrhage occurs not only in semicomatose and comatose patients but also in alert patients (16.9%) and those with a lacunar syndrome (12.5%). Our findings suggest that cerebrovascular disease in the Chinese selectively affects small vessels, causing lacunes and hemorrhages. In future community studies on stroke prevalence, researchers should be cautious about interpreting similar prevalence rates as reflecting similar risk factors or pathologies. (*Stroke* 1990;21:230-235)

Huang et al, Stroke 1990

- 1 April 1984 to 31 March 1985
- 540 Chinese aged 20-70 admitted to Medical Unit of Queen Mary Hospital
- CT in 80.2% (within 3 d in 53.4%, 4-7 d in 18.7%, 2-3 wk in 23.3%, >3 wk in 4.6%)
- Autopsy in 5.9%

Huang et al, Stroke 1990

- Mean age 58.9 yr; M:F 1.3:1.0
- IS 50% (lacunar syndrome 43.3%)
- ICH 30.6%
- SAH 3.7%
- Others 15.7%
- IS: cortical 25.6%, subcortical 9.6%, lacunar 30%, posterior fossa 5.6%
- Pattern different from Caucasians

Early Hospital Stroke Registry

1. Neurology. 1992 May;42(5):985-7.

Stroke subtypes among Chinese living in Hong Kong: the Shatin Stroke Registry.

Kay R, Woo J, Kzeel L, Wong HY, Teoh R, Nicholls MG.

Department of Medicine, Chinese University of Hong Kong, Shatin.

The Shatin Stroke Registry is a prospective study of all patients admitted with acute stroke to a general hospital in Hong Kong where the population is predominantly Chinese. Each patient was examined by a neurologist and 95.5% of the patients had a brain CT. Of 777 patients included in the study, 44.0% had a cortical/subcortical infarct, 18.5% a supratentorial lacunar infarct, 24.2% a supratentorial intracerebral hemorrhage, 5.8% brainstem/cerebellar infarct, 2.9% a brainstem/cerebellar hemorrhage, and 4.5% an uncertain diagnosis. The overall 30-day case fatality rate was 25.4%. Comparison with five stroke registries from the West suggests that intracerebral hemorrhage occurs between two and three times more frequently in the Chinese than in Westerners. Whether there is any difference in the relative frequencies for lacunar infarction remains unclear.

PMID: 1579254 [PubMed - indexed for MEDLINE]

Kay et al, Neurology 1992

- Shatin Stroke Registry; 1989
- 860 patients admitted to Medical Dept of Prince of Wales Hospital, including 31 TIA, 27 SAH, 12 tumor, 8 other diagnoses, 5 non-Chinese
- 777 (90.3%) Chinese with IS or ICH
- CT in 95.5%

Kay et al, Neurology 1992

- Mean age 69.5 yr; M:F = 1:1
- IS 68.4%
- IS: 64.3% cortical/subcortical, 27% lacunar, 8.5% posterior
- ICH 27.1%
- ICH: 89.3% supratentorial, 10.7% infratentorial
- Uncertain 4.5%

Kay et al, Neurology 1992

- 30 d fatality rate 25.4% (20.5% cortical/subcortical IS, 2.1% lacunar IS, 22.2% posterior fossa, 42.6% supratentorial ICH, 56.5% infratentorial ICH)
- HT 44.5%, DM 15.3%, cardiac disease 11.6%, previous stroke 15.2%

Early Hospital Stroke Registry

- IS 50-68%
- ICH 27-31%
- SAH 4%
- Cortical/subcortical IS 35-64%
- Lacunar IS 27-30%
- Posterior fossa IS 6-9%
- Supratentorial ICH 89%
- Infratentorial ICH 11%
- Risk factors 10-45%

Stroke Registry in Hong Kong

Stroke Registry at QMH

- Started in October 1996
- Common database for PYNEH & RH (two other regional hospitals on Hong Kong Island)
- Included data from PYNEH & RH from April 2004 to December 2005; plus a blood sample for DNA and serum
- Incorporated into hospital protocol since December 2008

Hong Kong Island Stroke Databank® Ref #: RQ (no.)_1999_(yr)

Gum label (Address) Gum label (Bar code)

(Please tick, circle, delete and fill as appropriate)

1. Clinical Process Centre PYNEH QMH RH Upon waking

Onset of symptoms: dd mm yy Time : : Emergency case - arrival to AED: dd mm yy Time : : Clinical admission or Transfer in - admission date: dd mm yy Arrival medical ward: dd mm yy Time : : Time of CT brain: dd mm yy Time : : Arrival to stroke unit/neuro bed: dd mm yy Time : : Duration of stay in stroke unit/neuro bed: days Discharge / death / transfer out: dd mm yy

Convalescent stroke bed Convalescent non-stroke bed Ambulatory rehabilitation ward Day rehabilitation Home Died Old aged home Nursing home Transfer to geriatrics Transfer to neurosurgery Transfer to orthopaedic surgery Transfer to surgery Other disposal _____

2. In-Hospital Outcome

NIHSS score: After admission = ____ Upon discharge = ____
 Deteriorated; worst on ____ days post-stroke with NIHSS score = ____

Complications: seizure constipation haemorrhagic transformation
 pneumonia UTI GI bleed DVT fall bed sore
 died (dd mm yy) depression
 others _____

Barthel index: Upon discharge = ____ (Before admission = ____)

UPON DISCHARGE OF PATIENT PLEASE KEEP IN WARD FOR NEUROLOGY REGISTRARS TO COLLECT

©Division of Neurology, Department of Medicine, Queen Mary Hospital (last modified: February 1999)

4. Clinical Database

Handedness: R L ambidextrous unknown
Side of neurological deficits: R L both unknown

Stroke subtype on discharge

CT: TACT (total anterior) PACT (partial anterior) POCI (posterior)
 LACT (lacune): PMH PSS SMS AH CHD others _____

ICH: supratentorial posterior fossa
 anticoagulation heparin/warfarin/LMWH/ReoPro thrombolysis in TPA in TPA/SK/UK/other/____
 ruptured aneurysm AVM amyloid angiopathy others _____

SAH: ruptured aneurysm AVM others _____

TIA/RIND: duration ____ hrs; vascular territory (if known) _____

History of CVA ____; details _____
 History of TIA ____; details _____

Risk factors HT DM IHD AMI (6 weeks) smoking drinking PVD
 lipid AF valvular disease family Hx others _____

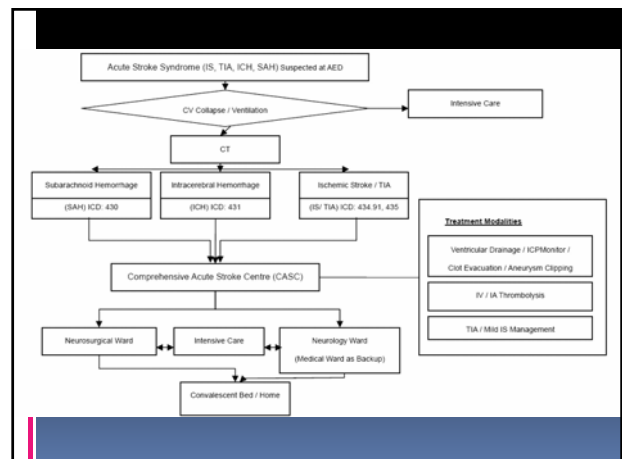
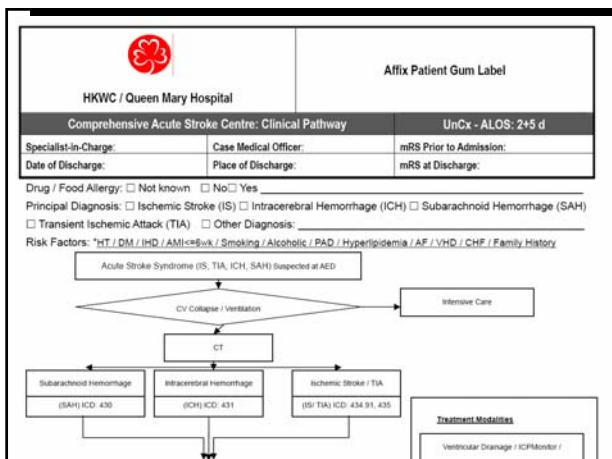
Management antiplatelet ASA/Ticlopidine/Sulfasalazine anticoagulants heparin/warfarin/LMWH/ReoPro
 thrombolysis in TPA in TPA/SK/UK/Other _____
 mannitol/glycerol/both neurosurgical intervention _____
 GI prophylaxis Aspirin/H2A/PPI/Succral others _____ iv fluid NG feed (____ day)
 antihypertensives in the 1st 3 days urethral catheter
 others _____
 haemodynamic monitoring - invasive non-invasive
 mechanical ventilation - due to CNS disease progression others _____

Investigations (Write "p" in box if pending)

CT normal abnormal _____
 CTFU normal abnormal _____
 CTA normal abnormal _____
 MRI normal abnormal _____
 MRA normal abnormal _____
 Duplex normal abnormal _____
 TCD normal abnormal _____
 DSA normal abnormal _____
 Echo normal abnormal (TTE/TEE) _____
 PM normal abnormal _____
 Others normal abnormal _____

FBS = ____; Total Chol = ____; Tg = ____; LDL-C = ____; HDL-C = ____;
TC-HDL Ratio = ____; HbA1C = ____; ESR = ____

Additional Information _____



Accident & Emergency Department Affix Patient Gum Label

Screening for Acute/Recent Stroke or Recent TIA (tick & enter as appropriate)

- Last time known to be symptom free: Date (dd/mm/yyyy) _____; Time (hh:mm) _____
- Sudden onset of focal *motor/speech/language/sensory/visual symptoms
- Symptoms suggest loss of functions (i.e. negative symptoms)
- Symptoms present <72 h (for TIA, duration = _____ min)
- Not previously bedridden or wheelchair bound (mRS <4; mRS = _____)
- No history of seizures or epilepsy
- CBC/PT/INR/APTT/RG/LFT/RFT; ECG; setup IV access
- Random blood glucose 3 to 23 mmol/L (RG = _____ mmol/L)
- Not attributable to an alternative diagnosis

*Delete as appropriate

Key History (tick & enter as appropriate)

Recent events (dd/mm/yyyy)

- Stroke
- TIA
- MI
- Trauma
- Surgery
- Bleeding

Comorbid diseases

- Hypertension
- DM

Use of medications

- Anticoagulants
- Insulin
- Antihypertensives

Physical Examination (tick if examined & enter the abnormal findings)
* Delete as appropriate

- Airway
- Breathing
- Circulation
- Pulse oximetry
- Temperature
- Trauma or seizure
- Carotid bruit
- Heart failure
- BP
- Rhythm
- Bleeding tendency
- Height _____ cm (*estimated/measured)
- Weight _____ kg (*estimated/measured)
- Waist circumference _____ cm
- Other _____

Other History / Physical Findings:

CASC Affix Patient Gum Label

Probable Ischemic Stroke

- Known time of onset or last time known to be fine hh:mm
- NIHSS score >=2 (NIHSS = _____)
- Not previously bedridden or wheelchair bound (mRS <4; _____)
- Absence of a diagnosis mimicking stroke
- No sign of blood or tumor on brain CT / MRI

Onset >=9 h Onset 3-9 h # Onset <3 h

- Aspirin 80-150 mg OD
- Neuroobservation
- ST
- PT
- OT
- Dietitian

- Check list for mechanical thrombectomy
- Consent for mechanical thrombectomy
- Check BP
- Neuroobservation

- Check list for IV TPA
- Consent for IV TPA
- Check BP
- Neuroobservation

Comprehensive Acute Stroke Centre

Check-list for IV TPA

- Diagnosis of probable ischemic stroke
- NIHSS score >=2
- Neurological signs not clearing spontaneously
- mRS <4 prior to this admission
- Caution exercised if NIHSS >20
- Not suggestive of SAH
- Onset <3 h upon commencement of IV TPA
- No head trauma or prior stroke in previous 3 months
- No myocardial infarction in previous 3 months
- No gastrointestinal or urinary tract hemorrhage in previous 21 days
- No major surgery in previous 14 days
- No arterial puncture at a noncompressible site in previous 7 days
- No history of previous intracranial hemorrhage
- Blood pressure not markedly elevated (systolic <185 mmHg and diastolic <110 mmHg)
- No evidence of active bleeding or acute trauma (fracture)
- Not on oral anticoagulant or, if anticoagulated, INR <=1.7
- If receiving heparin in previous 48 h, APTT must be normal
- Platelet count >=100,000 cu mm
- Blood glucose >=2.7 mmol/L
- No seizure with postictal residual neurological impairments
- CT does not show hypodensity >1/3 cerebral hemisphere
- Not pregnant
- Patient and family members understand the potential risks and benefits from treatment
- Consent available

Check-list for Mechanical Thrombectomy #

- Diagnosis of probable ischemic stroke
- NIHSS score >=8
- Neurological signs not clearing spontaneously
- mRS <4 prior to this admission
- Caution exercised if NIHSS >20
- Not suggestive of SAH
- No eligible for IV TPA
- Recent major surgery
- Large extra- or intra-cranial artery occlusion
- Absence of >50% stenosis of proximal artery
- Interventionalist & angio. room / cath. lab. available
- Onset 3-9 h upon commencement of thrombectomy
- Known hemorrhagic diathesis
- Known coagulation factor deficiency
- Blood pressure not markedly elevated (systolic <185 mmHg and diastolic <110 mmHg)
- Not on oral anticoagulant or, if anticoagulated, INR <=3.0
- If receiving heparin in previous 48 h, APTT <2 times of normal
- Platelet count >=20,000 cu mm
- Blood glucose >=2.7 mmol/L
- Severe allergy to contrast media
- No seizure with postictal residual neurological impairments
- CT does not show significant mass effect
- Not pregnant
- Life expectancy <3 months
- Patient and family members understand the potential risks and benefits from treatment
- Consent available

CASC Affix Patient Gum Label

Recent Transient Ischemic Attack

Recent TIA

- Onset <72h: _____ (dd/mm/yy) _____ (hh:mm)
- Antiplatelet therapy
- Anticoagulation
- Control risk factors
- ABCD score (_____)

ABCD2 Score

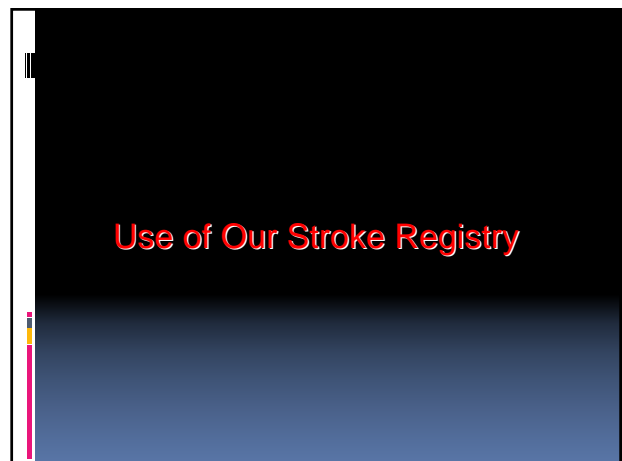
Age (yr): 1 if >=60; 0 if <60


BP: 1 if SBP >140 and/or DBP >=90 mmHg; 0 if SBP <=140 and DBP <90 mmHg

Clinical feature: 2 if weakness; 1 if speech; 0 if others

Duration (min): 2 if >=60; 1 if 10-59; 0 if <10 (actual _____)

DM: 1 if yes for DM; 0 if no for DM



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 DOI: 10.1054/jocn.2000.3805, available online at <http://www.elsevier.com> on 

Clinical study

Hong Kong patients' knowledge of stroke does not influence time-to-hospital presentation

R. T. F. Cheung FRCP (EDM, GLASG) PhD
 Division of Neurology, University Department of Medicine, The University of Hong Kong, Queen Mary Hospital, Pokfulam, Hong Kong

Summary A prospective interview of consecutive patients admitted with acute stroke was conducted over an 8-week period to study the influence of patients' knowledge of stroke on time to presentation in Hong Kong. Early arrival was defined as within 6h of symptom onset. The patients' general knowledge of stroke was fair, and early arrival was seen in 40 (56.3%) of 71 patients. Early presentation was associated with male sex ($P=0.028$) and a lower initial Glasgow coma scale score ($P=0.072$), but not with age, a better general knowledge of stroke, a previous history of stroke or transient ischaemic attack, Rankin score upon discharge, and level of education. On the other hand, late presentation was associated with a belief in permanent disability ($P=0.056$). Thus, improving the general knowledge of stroke among Hong Kong people may not reduce delay in hospital presentation of stroke patients. © 2001 Harcourt Publishers Ltd

Keywords: stroke onset, acute stroke, health education, Chinese, survey, Hong Kong

Original Paper

Cerebrovascular Diseases
 Cerebrovasc Dis 2001;12:1–6

Circadian Variation of Stroke Onset in Hong Kong Chinese: A Hospital-Based Study

Raymond T.F. Cheung Windsor Mak K.H. Chan
 Division of Neurology, University Department of Medicine, The University of Hong Kong, Queen Mary Hospital, Pokfulam, Hong Kong

Abstract

Circadian variation of onset of transient ischaemic attack (TIA) or stroke during four 6-hourly periods starting from midnight was studied in Hong Kong Chinese patients admitted to a regional hospital between October 1996 and July 1999. The onset was classifiable into one of the 6-hourly periods in 832 of 905 patients; patients with unclassifiable onset were more likely to have lacunar infarct and less likely to have intracerebral haemorrhage (ICH). There was a significant circadian variation of onset in all strokes and TIA, TIA alone, ischaemic stroke (IS), ICH and different IS subtypes. The risk of onset was greatest between 6 a.m. and noon for IS or TIA, but between noon and 6 p.m. for ICH. There was no difference in the circadian variation between patients with and without prior TIA or stroke. This hospital-based study revealed a significant circadian variation of onset in different types and subtypes of stroke.

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| Characteristics | Classifiable onset (832 patients) | Unclassifiable onset (73 patients) | p^1 |
|-----------------------------|-----------------------------------|------------------------------------|--------|
| Mean age \pm SD, years | 68.9 \pm 11.4 | 69.3 \pm 8.8 | 0.7702 |
| Male sex | 465 (55.9) | 42 (57.5) | 0.8819 |
| History of TIA/stroke | 209 (25.1) | 20 (27.4) | 0.7728 |
| Hypertension | 539 (64.8) | 48 (65.8) | 0.9692 |
| Dyslipidaemia | 409 (49.2) | 36 (49.3) | 0.9796 |
| Smoking | 312 (37.5) | 35 (47.9) | 0.1022 |
| Diabetes mellitus | 255 (30.6) | 27 (37.0) | 0.3226 |
| Atrial fibrillation | 137 (16.2) | 7 (9.6) | 0.1696 |
| Ischaemic heart disease | 110 (13.2) | 10 (13.7) | 0.9082 |
| Alcohol abuse | 75 (9.0) | 6 (8.2) | 0.9885 |
| Valvular heart disease | 15 (1.8) | 0 (0.0) | 0.4973 |
| Peripheral vascular disease | 8 (1.0) | 1 (1.4) | 0.7360 |
| NIHSS on admission \pm SD | 10.1 \pm 9.6 | 5.9 \pm 6.1 | 0.0003 |
| TACI or PACI | 263 (31.6) | 19 (26.0) | 0.3921 |
| LACI | 270 (32.5) | 37 (50.7) | 0.0025 |
| POCI | 75 (9.0) | 8 (11.0) | 0.7335 |
| ICH | 177 (21.3) | 7 (9.6) | 0.0260 |
| SAH | 2 (0.2) | 0 (0.0) | 0.6749 |
| TIA | 45 (5.4) | 2 (2.7) | 0.4775 |

Values in parentheses are percentages. NIHSS = National Institute of Health Stroke Scale.
¹ Comparing between the two groups using two-tailed Student's *t* test or χ^2 test.

Original Paper

Cerebrovascular Diseases
 Cerebrovasc Dis 2002;14:122–128

Sexual Functioning in Chinese Stroke Patients with Mild or No Disability

Raymond T.F. Cheung
 Division of Neurology, University Department of Medicine, University of Hong Kong, Queen Mary Hospital, Hong Kong, P.R. China

Abstract

This study was conducted to assess the effects of stroke on sexual functioning of patients with mild or no disability and to explore the associations of clinical and psychosocial factors with post-stroke changes in sexual functions. Consecutive stable Chinese patients were invited to complete a self-administered questionnaire concerning their pre- and post-stroke sexual functions and habits. Results from this cohort of 63 men and 43 women revealed a post-stroke decrease in libido, coital frequency, sexual arousal, orgasm and sexual satisfaction in 54.3%, 43.8%, 25.0% (women) to 51.6% (men), 20.0% (women) to 45.9% (men) and 28.6% of patients, respectively. Logistic regression indicated unwillingness for sex and a belief in an adverse effect of stroke on sexuality as explanatory factors for decreased sexual satisfaction. Thus, sexual dysfunctions are common in Chinese stroke patients with mild or no disability.

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Use of the Original, Modified, or New Intracerebral Hemorrhage Score to Predict Mortality and Morbidity After Intracerebral Hemorrhage

Raymond Tak Fai Cheung, MBBS, PhD; Liang-Yu Zou, MBBS, MPhil

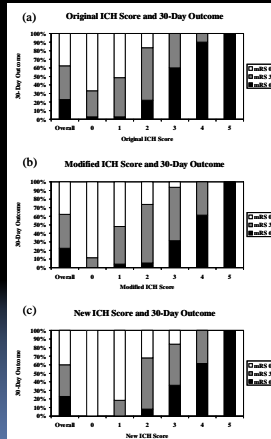
Background and Purpose—A simple clinical scale of intracerebral hemorrhage (ICH), comprising the Glasgow Coma Scale score, age, infratentorial origin, ICH volume, and intraventricular hemorrhage, was recently shown to predict 30-day mortality. We studied how well the original ICH Score would predict morbidity and mortality and determined whether modification would improve the predictions.

Methods—Patients admitted to a regional hospital with acute ICH in 1999 were reviewed. Independent predictors of mortality or good outcome (modified Rankin score ≤ 2) at 30 days were identified by logistic regression to devise a new ICH Score for comparison with the original Score. A modified Score was created by substituting National Institutes of Health Stroke Scale (NIHSS) for the Glasgow Coma Scale.

Results—The mortality rate was 22%, and 35% had good outcome. Independent factors for mortality were high NIHSS score, intraventricular hemorrhage, subarachnoid extension, and narrow pulse pressure. Independent factors for good outcome were low NIHSS score and low admission temperature. For all ICH Scores, no patient had a maximum score of 6. Cutoff values of ≥ 3 and < 3 provided the best Youden's index of diagnostic test in all ICH Scores for mortality and good outcome, respectively. The original and modified ICH Scores predict mortality equally well. The new and modified ICH Scores are slightly better for prediction of good outcome.

Conclusions—All 3 ICH Scores are simple clinical grading scales. As reliable predictors of good outcome and/or mortality, they are useful in clinical research studies and standardization of clinical protocols. (*Stroke*. 2003;34:1717-1722.)

Key Words: cerebral hemorrhage ■ intracerebral hemorrhage ■ outcome ■ prognosis ■ stroke assessment



CASC at HKWC (QMH)

- Implemented on 16 December 2008
- Protocol-driven acute stroke care management during office hours
- Direct admission from AED
- Priority screening of acute stroke patients at AED
- Neurology medical staff informed by AED
- Urgent CT brain prior to admission
- Extended hours of screening for direct admission since 16 September 2009

CASC at HKWC from Mid Dec 2008 to Mid Dec 2009 (12 months)

- Dedicated CT scanner at AED: 3 September 2009
- Direct admission via AED: 104 acute stroke patients
- Expeditious transfer from general call wards: 5 acute stroke patients
- Total CASC admissions: 109
- 13 patients not admitted because all beds occupied (3), admission criteria not met (5) or outside admission time frame (5)

CASC at HKWC from Mid Dec 2008 to Mid Dec 2009 (12 months)

- Average LOS in CASC: 2.17 days
- Average LOS in neurology bed: 5.04 days
- Door to CT time: 45.9 min (10-204 min)
- CT to ward time: 27.2 min (6-97 min)
- IV rtPA: 20 patients (18.34%)
- IMPACT 24: 7 patients (6.4%)
- DIAS 3: 4 patients (3.7%)
- Door to needle time: 91.4 min (20-296 min)
- Within 60 min (3), 61-90 min (9), 91-120 min (4), 121-150 min (3), >150 min (1)

CASC at HKWC from Mid Dec 2008 to Mid Dec 2009 (12 months)

- Average LOS in CASC: 2.17 days
- Average LOS in neurology bed: 5.04 days
- Door to CT time: 45.9 min (10-204 min)
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- Within 60 min (3), 61-90 min (9), 91-120 min (4), 121-150 min (3), >150 min (1)

CASC at HKWC from Mid Dec 2008 to Mid Dec 2009 (12 months)

➤ Outcome of 109 patients

- ❖ B7 ward: 5
- ❖ Home: 31
- ❖ Transfer out: 4
- ❖ To neurosurgery: 6
- ❖ To TWH for rehabilitation: 49
- ❖ To other convalescent beds: 8
- ❖ Died: 6

➤ 9 IV rtPA-treated patients: 4 points or more improvement in NIHSS

Use of Stroke Registry in PYNEH

J Neurol 2005; 250: 839–843
DOI 10.1007/s00415-005-1091-5

ORIGINAL COMMUNICATION

Chun-Ming Cheung
Tak-Hong Tsui
Man Au-Yeung
Amy Suk-Yan Tang

Epileptic seizure after stroke in Chinese patients

Abstract This was a hospital-based cohort study aiming at determining the occurrence rate of post-stroke seizures and the associated risk factors. From 27 July 1996 to 16 June 1998, the first 1000 consecutive patients in the acute stroke registry were retrospectively reviewed for one year after acute stroke to identify seizure occurrence. The demographic data, seizure onset time, seizure type, drug treatment, response to medication, electroencephalogram findings and cranial computed tomogram findings were collected. Thirty-four patients (3.4%) developed seizure within one year after acute stroke. Univariate analysis revealed that male, age greater than 65 years, total anterior circulation infarction, partial anterior circulation infarction, cortical location

and large lesion were significantly associated with post-stroke seizure while multivariate analysis showed that only male (adjusted OR 3.21, $p < 0.01$) and cortical location (adjusted OR 3.83, $p < 0.05$) were significant independent risk factors. Fifty-six percent of early seizures were partial type whereas 72% of late seizures were generalized tonic-clonic type of undetermined onset. Seizures occurred in 3.4% of patients within one year after the onset of stroke. This percentage of seizure occurrence and associated risk factors were similar to other studies. However, intracerebral and subarachnoid haemorrhage were not shown to be risk factors in our study.

Key words stroke · risk factors · seizures

ORIGINAL ARTICLE

Outcomes after first-ever stroke

CM Cheung 張春明
TH Tsui 蔡德康
Sonny FK Hon 韓方光
M Au-Yeung 歐陽敏
KL Shiu 邵家樂
CN Lee 李至南
CY Huang 黃麗君

Objectives To determine the outcomes after first-ever stroke, including mortality, dependence, and recurrence.

Design Retrospective study on a prospectively collected cohort.

Setting Regional hospital, Hong Kong.

Patients A cohort of 755 patients presented to our hospital from 1996 to 1998 with their first-ever stroke.

Main outcome measures Mortality and stroke recurrence rate at 30 days, 1 year, and 5 years from the onset of the stroke. Dependence in activity of daily living at 5 years from the onset of stroke.

Results The mortality rate was 15.1% at 30 days, 22.5% at 1 year, and 39.7% at 5 years from the onset of the first-ever stroke. The rate of stroke recurrence was 0.9% at 30 days, 7.0% at 1 year, and 21.2% at 5 years from the onset of first-ever stroke. Among patients presenting with ischaemic strokes, 109 (20.6%) had a recurrence, of which 92 (84%) were ischaemic strokes and 17 (16%) were haemorrhagic. Among patients presenting with intracerebral haemorrhage, 25 (23.1%) had a recurrence, of which 12 (48%) were haemorrhagic strokes and 13 (52%) patients were ischaemic. After 5 years, 11% of the patients were dependent in terms of activity of daily living.

Conclusion The long-term prognosis after first-ever stroke is poor—5 years after their stroke, 39.7% of patients had died and 10.7% were dependent in terms of activity of daily living; 136 (21%) who survived at least 30 days after the initial stroke, had a recurrence within 5 years.

ORIGINAL ARTICLE

Using the National Institutes of Health Stroke Scale (NIHSS) to predict the mortality and outcome of patients with intracerebral haemorrhage

CME

CM Cheung 張春明
TH Tsui 蔡德康
Sonny FK Hon 韓方光
M Au-Yeung 歐陽敏
KL Shiu 邵家樂
CN Lee 李至南
CY Huang 黃麗君

Objectives To investigate whether the National Institutes of Health Stroke Scale (NIHSS) can be used to predict mortality and functional outcome in patients presenting with intracerebral haemorrhage.

Design Retrospective study of a prospectively collected cohort.

Setting Regional hospital, Hong Kong.

Patients A cohort of 359 patients presented to our hospital from 1996 to 2001 with their first-ever stroke and intracerebral haemorrhage.

Main outcome measures The sensitivity and specificity of the NIHSS with a cut-off point of 20 in predicting mortality at 30 days and 5 years, and a favourable functional outcome at 5 years.

Results A total of 359 patients were available for analysis and were divided into three subgroups according to the site and the size of the haematoma. The NIHSS can predict 30-day mortality with a sensitivity of 81% and a specificity of 90%. The NIHSS can predict 5-year mortality with a sensitivity of 57% and a specificity of 92%. In predicting favourable functional outcomes at 5 years, the NIHSS had a sensitivity of 90% and a specificity of 16%.

Conclusions The NIHSS performed on admission can be used to predict mortality at 30 days and 5 years as well as favourable functional outcome at 5 years, all with an acceptable sensitivity and specificity.

Update on Our Stroke Registry

QM Stroke Registry

- Oct 1996 to Dec 2003 (7.25 yr)
 - ❖ 5,588 patients
 - ❖ 3,000 M & 2,588 F (M:F=1.2:1.0)
 - ❖ Mean age: 70.5 yr
 - ❖ Mean NIHSS upon admission: 8.96
 - ❖ IS: 70%
 - ❖ ICH: 17%
 - ❖ SAH: 1%
 - ❖ TIA: 12%
- 2004 to 2008 (5 yr): 5,178 patients
- 2009: 897 patients

Conclusions

Hospital Stroke Registry

- Improve the care of acute stroke patients
- Support development of standardized management protocol
- Facilitate audit of stroke care
- Facilitate implementation of acute therapy
- Facilitate review of stroke patients
- Facilitate selection of patients by stroke types and subtypes
- Facilitate research projects

Thank You