<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Stroke registry in Hong Kong</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Author(s)</strong></td>
<td>Cheung, RTF</td>
</tr>
<tr>
<td><strong>Citation</strong></td>
<td>International Symposium on Stroke Registry (Chang Gung Healthcare System), Stroke Center, Linkou Chang Gung Memorial Hospital, Taiwan, 15 May 2010. In Proceedings of the International Symposium on Stroke Registry (Chang Gung Healthcare System), 2010, p. 12; 長庚醫療體系四院區腦中風登錄國際學術研討會, 台灣, 林口長庚紀念醫院 腦中風中心, 2010年05月15日. 長庚醫療體系四院區腦中風登錄國際學術研討會會議記錄, 2010, p. 12</td>
</tr>
<tr>
<td><strong>Issued Date</strong></td>
<td>2010</td>
</tr>
<tr>
<td><strong>URL</strong></td>
<td><a href="http://hdl.handle.net/10722/126395">http://hdl.handle.net/10722/126395</a></td>
</tr>
<tr>
<td><strong>Rights</strong></td>
<td>This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.</td>
</tr>
</tbody>
</table>
Stroke Registry in Hong Kong

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

Hong Kong - a Special Administrative Region of China

9.6 millions square km

Hong Kong Special Administrative Region

1,095 square km

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. Cheo, DMRD, FRCP, 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 (age 20–70 yr) with strokes. Computed tomography or angiogram was obtained in 80.2% and showed an increase in the proportion with lacunar infarctions, whereas the pattern of hemorrhagic stroke is more similar to that in Caucasians. This increase in the incidence of cerebral hemorrhage occurs not only in senile dementia and cancer patients but also in young patients (16.9%) and those with a lacunar syndrome (12.2%). Our findings suggest that cerebrovascular disease in the Chinese is relatively a small vessel, causing lacunar infarction. 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;21:238–239)

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. THE STROKE REGISTRY. 1990 May;4(2):159-70.
    Stroke subtypes among Chinese living in Hong Kong: the Stroke Registry.
    C.Y. Huang, MB, BS(HK), FRACP; F.L. Cheo, DMRD, FRCP; Y.L. Yu, MD(HK), FRCP(Edin).
    Department of Neurology, Chinese University of Hong Kong, Shatin.
    The 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 53.4% of the patients had a brain CT. Of 757 patients included in the study, 60.1% had a cortical/sclerotic infarct, 10.0% a hypodense intracerebral hematoma, 22.6% a lacunar syndrome, 3.7% a subarachnoid hemorrhage, and 1.4% an intracerebral hemorrhage. The mean 1-day case-fatality score was 5.4%. Comparison with five stroke registries from the West suggests that intracerebral hemorrhage occurs twice as often as in whites and four times more frequently in the Chinese than in Caucasians. Whether there is any difference in the relative proportions for lacunar infarct stroke remains unclear.
    MEDLINE (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

- 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

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
Clinical study

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

R.T.F. Cheung, S.K. Lui
Department of Neurology, Queen Mary Hospital, University of Hong Kong, Hong Kong

Summary: A prospective review of consecutive patients admitted with stroke was conducted over a 10-year period to study the influence of the patient’s knowledge of stroke on time to presentation in Hong Kong. Early arrival was defined as within 3 hours of symptom onset. The patients’ knowledge of stroke was assessed by using a 10-item knowledge questionnaire. The patients’ knowledge of stroke was suboptimal, and early arrival was in the top 10% of patients. Early presentation was associated with male sex (P = 0.05) and not to marital status (P = 0.49). The high scores were associated with a higher degree of perceived disability (P = 0.03). This survey provides evidence that early presentation of stroke is a modifiable factor.

Keywords: stroke, stroke risk, stroke health education, Chinese, survey, Hong Kong

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

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

Abstract

Circadian variation of onset of transient ischemic attack (TIA) or stroke during four 6-hour 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 classified into one of the 6-hour periods in 162 of 226 patients. Patients with undiagnosed onset were more likely to have lacunar infarct and less likely to have intracerebral hemorrhage (ICH). There was a significant circadian variation of onset in all strokes and TIA. TIA alone, ischemic 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. This hospital-based study revealed a significant circadian variation of onset in different types and subtypes of stroke.

Table

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Circadian onset (62 patients)</th>
<th>Unexpected onset (70 patients)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 a.m. - 12 p.m.</td>
<td>28/62 (45%)</td>
<td>39/70 (56%)</td>
</tr>
<tr>
<td>12 p.m. - 6 p.m.</td>
<td>23/62 (37%)</td>
<td>26/70 (37%)</td>
</tr>
<tr>
<td>6 p.m. - 12 a.m.</td>
<td>11/62 (18%)</td>
<td>15/70 (21%)</td>
</tr>
<tr>
<td>12 a.m. - 6 a.m.</td>
<td>4/62 (6%)</td>
<td>6/70 (8%)</td>
</tr>
</tbody>
</table>

Values in parentheses are percentages. IS = National Institute of Health Stroke Scale

Sexual Functioning in Chinese Stroke Patients with Mild or No Disability

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

Abstract

This study was conducted to assess the effects of stroke on sexual functioning of patients with and without disability. Participants with disabilities were assessed at 6 months post-stroke for changes in sexual function. Participants with disabilities were assessed at 6 months post-stroke for changes in sexual function. Participants with disabilities were assessed at 6 months post-stroke for changes in sexual function.

Table

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Circadian onset (62 patients)</th>
<th>Unexpected onset (70 patients)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 a.m. - 12 p.m.</td>
<td>28/62 (45%)</td>
<td>39/70 (56%)</td>
</tr>
<tr>
<td>12 p.m. - 6 p.m.</td>
<td>23/62 (37%)</td>
<td>26/70 (37%)</td>
</tr>
<tr>
<td>6 p.m. - 12 a.m.</td>
<td>11/62 (18%)</td>
<td>15/70 (21%)</td>
</tr>
<tr>
<td>12 a.m. - 6 a.m.</td>
<td>4/62 (6%)</td>
<td>6/70 (8%)</td>
</tr>
</tbody>
</table>
Use of the Original, Modified, or New Intracerebral Hemorrhage Score to Predict Mortality and Morbidity After Intracerebral Hemorrhage

Reynold Tak Fai Cheung, MBBS, MPhil, Lung-Ti Zuo, MBBS, MPhil

Background and Purpose: A simple clinical scale of intracerebral hemorrhage (ICH), comprising the Glasgow Coma Scale score, age, admission range, ICH volume, and intracranial hemorrhage, was usually shown to predict 30-day mortality. We trials that the new ICH score would predict mortality and morbidity and determined whether modifications would improve the prediction.

Methods—Patients admitted to a regional hospital with acute ICH in 1993 were reviewed. Independent predictors of mortality or good outcome (mRS 0-2) in 30 days were identified by logistic regression. A new ICH score was compared with the original score. A modified score was created by applying National Institutes of Health Stroke Scale (NIHSS) for the Glasgow Coma Scale.

Results—The mortality rate was 28%, and 60% had good outcome. Independent factors for outcome were intracranial hemorrhage volume and intracranial hemorrhage and age. A new ICH score was created. In patients with good outcome, the NIHSS score and age in the original score did not predict mortality. In patients with poor outcome, the NIHSS score and age in the original score did not predict mortality.

Conclusions—All ICH scores are simple clinical grading scales. The modified versions of ICH and mRS are useful for clinical research studies and randomized controlled clinical trials.

Keywords: 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)
- 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)

- 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

Outcomes 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

Epileptic seizure after stroke in Chinese patients

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

Update on Our Stroke Registry
QMH 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