EDITORIAL

The stroke epidemic

Stroke is ranked second in the world as a cause of mortality and is the commonest cause of permanent disability in adults. In 2005, there were 5.7 million fatal strokes worldwide, and more than 1.4 million of these occurred in China. If there is no effective intervention, the global stroke death toll is expected to reach 7.8 million in 25 years' time.[1] Despite a continuing decline in stroke-related standardised mortality rates, the annual stroke mortality in Hong Kong remains consistently above 3000. In-patient care for stroke-related problems puts a heavy load on local institutions and constitutes about 5% of the bed use in Hospital Authority hospitals.[2] Hong Kong's population is rapidly ageing: about one third of our population are expected to be 60 years or older by 2050. Stroke will remain a major burden for the health care system, families, carers, and the community.

Stroke is a heterogeneous disorder. However, data about the underlying pathologies and outcomes after stroke among Chinese patients are scarce. It is under this circumstance that the paper by Cheung et al[3] is most welcome, enabling us to learn more about the characteristics of stroke in our local population. Haemorrhagic stroke used to be responsible for one third of the stroke pathology seen in Chinese stroke cohorts. With better control of hypertension, we have observed a continual decline in the proportion of haemorrhagic stroke to about 20% in recent years.[4] By contrast, we have witnessed an increase in lacunar infarcts from 27% to about 50% of patients suffering from ischaemic stroke.[5]

The mortality figures in Cheung et al's paper[3] confirm that stroke remains a dreadful disease in Hong Kong. More than half of the intracerebral haemorrhage patients are dead within 5 years. Cerebral bleeding is one of the least treatable forms of stroke and surgery has not been shown to be beneficial.[6] The haematoma volume and its growth rate are the most important prognostic determinants in this condition. Administration of activated factor VIIa within 4 hours of the onset has proven to be effective for limiting volume expansion and has improved functional outcomes after 3 months.[7] However, solutions for overcoming its commonest side-effect, thromboembolism, and the optimum dosage have yet to be worked out by ongoing trials.

The management of ischaemic stroke requires a multidisciplinary team approach in a geographically independent stroke unit. The Hong Kong Neurological Society and the Hong Kong Stroke Society have developed a consensus statement on the care of ischaemic stroke patients and provided guidelines on many aspects of the general management for these patients.[8] The advantage of thrombolytic therapy in ischaemic stroke was established more than a decade ago. A number of post-trial phase 4 studies have confirmed the safety and efficacy of intravenous alteplase used within 3 hours of the onset of an acute ischaemic stroke in routine clinical practice. The latest piece of evidence comes from the SITS-MOST study, involving more than 6400 cerebral infarction patients in 285 European centres.[9] Intravenous recombinant tissue plasminogen activator is not commonly used for ischaemic stroke in local institutions and many are still sceptical about the bleeding risk of thrombolytic treatment. The Japanese experience may offer us some helpful information. Intravenous alteplase was approved for treatment of acute ischaemic stroke in Japan at a recommended dose of 0.6 mg/kg from October 2005. Results from their continuous surveillance suggest that the lower dose is probably as effective and safe in the Asian stroke population.[10] With increasing demand from the public for an effective therapy against ischaemic stroke, the Hospital Authority and local neurologists should take an active role in evaluating the optimal alteplase regimen in Hong Kong.

Although lacunar infarction is responsible for the bulk of the ischaemic stroke cohort, some also suffer total anterior circulation infarction (TACI). This has a very poor prognosis with 30-day and 1-year mortality rates of 52.4% and 71.4%, respectively. On presentation, many TACI patients will be severely disabled with an NIH Stroke Score of more than 20, which is often considered a contra-indication for intravenous alteplase therapy. No alternative medical treatment has been proven effective. Aggressive management has, however, been developed to tackle this malignant condition. Pooled data from the DECIMAL, DESTINY, and HAMLET trials have suggested that decompressive hemicraniectomy and duraplasty may reduce the mortality without increasing the number of severely disabled survivors.[11] Hence, patients with space-occupying middle cerebral artery infarctions, who are aged between 18 and 60 years, should be referred to the neurosurgeons for consideration of decompressive surgery.

Prevention is the best treatment and this is particularly true for a disease with a dismal prognosis like stroke. In the paper by Cheung et al,[3] the 5-year recurrence rate ranged from 20.6% for ischaemic stroke to 23.1% for haemorrhagic stroke among the 30-day survivors. Strict control of blood pressure is the mainstay of prevention for haemorrhagic stroke. Identification of asymptomatic microbleeds in gradient echo magnetic resonance imaging may help detect patients at high risk of developing aspirin-associated intracerebral haemorrhages.[12]

Aspirin remains the commonest antiplatelet secondary prophylaxis used to prevent ischaemic strokes. Despite the benefit of dual antiplatelet therapy in an

acute coronary event and as prophylaxis against vascular complications after coronary stenting, the results of the MATCH[13] and CHARISMA[14] studies are disappointing. The combination of aspirin and clopidogrel was no better than either aspirin or clopidogrel alone for secondary prevention of vascular outcomes, and carried a significantly higher risk of major or intracranial bleeding. In patients with unstable plaque after a symptomatic carotid transient ischaemic attack, short-term use of the aspirin and clopidogrel combination was effective at reducing microemboli signals. This was reflected in a decrease in clinical vascular outcomes.[15] In the ESPSII and ESPRIT studies,[16,17] the use of an aspirin and modified release dipyridamole combination was more effective than a very low dose of aspirin for the secondary prevention of ischaemic stroke.

The PRoFESS trial[18] is the largest secondary prevention study started to date and has set up a direct head-to-head comparison between clopidogrel and an aspirin/modified release dipyridamole combination as prophylactic treatment after ischaemic stroke. Recruitment has been completed and the patients will be followed up till early 2008. It is hoped that its results will provide us with guidance on the optimal antiplatelet regimen against ischaemic stroke recurrence. Preventive measures may be different for Chinese patients as intracranial atherosclerosis is more prevalent among Chinese populations. The WASID study[19] showed that anticoagulation was not effective and caused higher mortality and more major bleeding. Emerging data have suggested that intracranial stenting is probably safe and effective in symptomatic severe intracranial atherosclerotic stenosis.[20] Unanswered questions include the efficacy of the different stent models and antithrombotic therapy strategies used to prevent stent re-stenosis.

In the past decade, significant advances have been achieved in the acute treatment and secondary prevention of stroke. With a concerted effort from health professionals, we hope that we shall be able to contain the stroke epidemic.

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