

## 'BRAIN ATTACK' : PRACTICAL ISSUES

## Editorial

## Stroke or Brain Attack

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The World Health Organisation defines stroke as "the rapidly developing clinical symptoms and/or signs of focal [at times global] disturbance of cerebral function, with symptoms lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin. The term 'Brain attack' is recently being used to describe the same clinical syndrome as stroke but within 24 hours of onset, when it is not possible to classify them into TIA (Transient ischaemic attack) or stroke.

**Magnitude of Problem**

According to WHO Survey in 1990, out of 9.4 million deaths in India, 19,000 were due to stroke. Thus, mortality rate in India due to stroke is 7.3/1, 00,000. As such, deaths due to stroke were 22 times higher than malaria, 1.4 times that due to tuberculosis, 4 times that due to rheumatic heart disease and almost equal to that of ischemic heart disease. These figures suggest that stroke mortality in India is significantly higher compared to Caucasians. Moreover, incidence of stroke is likely to increase in our country because of increasing population, increasing life expectancy and changing lifestyles (urbanization, smoking, salt/alcohol intake, stress, physical activity). WHO estimates for India show is expected that number of deaths from stroke to increase from 598000 in 2000 to 945000 in year 2020. Another disturbing fact is the relatively higher incidence of stroke in young persons in our country. The problem is further aggravated by the fact that the survivors are left with devastating disabilities with inability to lead a normal lifestyle.

Patients and their families have in the past felt frustrated and even the medical community had limited treatment to offer in these cases. However, recently there have been many advances with improvement in prevention and treatment of these disorders.

**Stroke centre** is a hospital or part of a hospital that (nearly) exclusively takes care of stroke patients with specialized staff with multidisciplinary approach to treatment and care. Care by stroke teams (including neurologists, neurosurgeons, interventional and diagnostic neuroradiologists) or by stroke units decrease the number of deaths and increase the number of independent survivors<sup>1</sup>. Patients with stroke need to undergo intensive evaluation and treatment to prevent further episodes of strokes.

**Thrombolysis** - Stroke is a medical emergency because brain cells start dying quickly and the treatment is most effective when given promptly<sup>2</sup>. It is a known fact that there is a zone around core of the infarct with cells, which though not functional can be revived with reperfusion. This zone known as "penumbra" can exist even after many hours after the onset of ischaemia. This is the target zone of recanalization (thrombolytic) therapies. Appropriate patients with ischaemic stroke can be treated by thrombolysis, which can result in significant improvement in prognosis in a portion of patients<sup>2</sup>. Intravenous thrombolysis can be performed upto 3-hours after the

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onset of stroke while intra-arterial therapy can be performed upto 6-hours or even longer in posterior circulation after onset of stroke and may be more effective in large vessel occlusion<sup>3</sup>. Advances in diagnostic imaging such as MR/CT angiography and diffusion/perfusion imaging are playing ever increasing role in precise diagnosis in these cases enabling well directed treatment.

**Interventional Neuroradiology** is a branch in which minimally invasive endovascular procedures of cerebrovascular disorders are performed. This minimally invasive approach ensures minimal injury to normal brain and interventional neuroradiologists are playing an ever increasing role in treatment of these patients. *Carotid artery stenting* can be performed to treat carotid stenosis. Similarly *vertebral and intracranial angioplasty* can be done to prevent strokes. Patients with subarachnoid haemorrhage need rapid evaluation and treatment for *intracranial aneurysms* because these cases have a very bad prognosis if not treated, mostly because of re-rupture of aneurysm. Endovascular treatment of the aneurysms can be performed and has been shown in a prospective multicentre trial to have better clinical outcome as compared to surgical clipping<sup>4</sup>. Intracranial arteriovenous malformations can also be treated by this minimally invasive method.

**Conclusion**

- \* The outcomes after stroke can be improved with development of centres with multi-disciplinary teams working according to well defined protocols with facilities to perform thrombolysis and endovascular neurointerventions.
- \* Early referral and prompt treatment at appropriate stroke centres - "Time is brain."
- \* Considerable effort is needed to increase public awareness early identification of stroke, is to be emphasized.
- \* CME programmes are needed to educate the medical community Usage of term "Brain attack" should be encouraged so as to promote a sense of urgency in management.

Purpose of this Symposium is to present a comprehensive review of various practical issues concerning management of patients suffering from cerebrovascular disorders. We hope that this effort of various contributors will play a role in creating awareness about this stupendous medical problem, preventing in the community.

**References**

1. *Alberts MJ, Latchaw RE, Selman WR et al.* Recommendations for comprehensive stroke centres: A consensus statement from the brain attack coalition. *Stroke* 2005;36:1597-1618
2. *Tissue plasminogen activator for acute ischemic stroke.* The National Institute of Neurological Disorders and Stroke rt-PA Stroke Study Group. *N Engl J Med.* 1995 Dec 14;333(24):1581-7
3. *Furlan A, Higashida R, Wechsler L, et al.* Intra-arterial prourokinase for acute ischemic stroke. The PROACT II study: a randomized controlled trial. *Prolyse in Acute Cerebral Thromboembolism.* *JAMA* 1999 1;282(21):2003-11
4. *Molyneux A, Kerr R, Stratton I, et al.* International Subarachnoid Aneurysm Trial (ISAT) Collaborative Group. International Subarachnoid Aneurysm Trial (ISAT) of neurosurgical clipping versus endovascular coiling in 2143 patients with ruptured intracranial aneurysms: a randomised trial. *Lancet* 2002 26;360(9342):1267-74