

## Prevalence of post-stroke depression, a Malaysian study

Mihajlo T GLAMCEVSKI BSc GDipPsy, Chong-Tin TAN FRCP MD

Department of Medicine, University of Malaya, Kuala Lumpur

### Abstract

This study was conducted to determine the prevalence of depression 3-6 months post stroke in the University Malaya Medical Centre, Kuala Lumpur. The study subjects consisted of patients admitted to the Hospital with stroke of any aetiology. The mean age of the patients was 56.8 years (SD  $\pm$ 12.5 years). Patients with dementia, aphasia or a condition that would interfere with the assessment were excluded from the study. The diagnosis of depression was based on the Zung Self Rating Scale. It was confirmed by a psychiatrist based on DSM-IV criteria. One hundred and sixty subjects were recruited for the study. The results were derived by comparing 80 stroke patients with 80 controls matched for age, sex, race and medications. The ethnic origin composition were 51% Chinese, 25% Indians and 22% Malays, with a 5:3 male to female ratio. Sixty-six percent of the patients were depressed, mild in 51% and moderate to severe in 15%. None of the patients were diagnosed and treated by the attending physicians for depression before the study. *Conclusion:* Depression was common among Malaysians 3-6 months after stroke. Moderate to severe depression was seen in 15% of patients.

*Key words:* stroke, depression, Malaysia

### INTRODUCTION

Stroke is a common neurological disorder, in fact, it is the third leading cause of death in many developed countries.<sup>1</sup> The age-adjusted incidence of stroke in the West is between 100 and 300 per 100,000 people per year, depending on the methods of assessment, country of origin, and structure of population in question.<sup>2</sup> Commonly quoted fatality rates are 17% at 6 months<sup>3</sup> and 22% at one year.<sup>4</sup>

Many stroke survivors are left with permanent physical and psychological disabilities. At 3-5 years, between 20% to 40% are functionally dependent in activities of daily living.<sup>4,5</sup> In light of this, it is not surprising that post-stroke depression has been reported to occur in 11% to 75% of all stroke patients.<sup>6</sup> Major depression has been reported to occur within the first few months after stroke in 10% to 27% of patients, and minor depression in 15% to 40% of patients.<sup>6</sup>

<sup>11</sup> It is likely depression can be considered to be one of the most prevailing and debilitating mental impairment, amongst stroke survivors.<sup>12</sup>

There is little data on stroke incidence and prevalence in South East Asia. Notwithstanding, it has been established that stroke is among the top four leading cause of death in ASEAN countries since 1992 - number one in Indonesia, third in Philippine and Singapore, fourth in Brunei, Malaysia and Thailand.<sup>13</sup> A survey of seven cities between 1986 and 1990 in China

yielded yearly rate of age-adjusted stroke of 216 per 100 000 population, showing that stroke is just as common a health problem among Chinese as other ASEAN nations.<sup>14,15</sup> Yet to date, there has been no previous published study on post-stroke depression in the ASEAN countries, and only sparse reports among Chinese populations.<sup>16,17</sup>

There is little information on the epidemiology of depression in the Malaysian population. The aim of this study was to determine the prevalence of depression 3-6 months post-stroke among Malaysians. Consequently the hypothesis was that a significantly high percentage of stroke patients 3 to 6 months after discharge from University Malaya Medical Centre, Kuala Lumpur, suffer from post stroke depression.

### METHOD

Consecutive patients admitted to the University Malaya Medical Centre with stroke from June to December, 1998 were screened for suitability to be included in the study. The final sample population was 80 stroke patients with 80 non-stroke control, i.e. 160 subjects in total. The study group was inclusive of patients who have suffered a stroke and been discharged from University Malaya Medical Centre, while excluding those that were demented, aphasic or exhibiting any other condition that would interfere with assessment, particularly depression

assessment.

During the initial admission, a neurologist confirmed the diagnosis and classification of stroke. While the principal investigator (Mihajlo Glamcevski) conducted an interview with the patients and the relatives, to build a better rapport for subsequent study. Three to six months after the initial admission, the patients were recalled for an interview for the study of depression. The patients were screened for depression using the 20 items Zung Self Rating Scale.<sup>18</sup> A psychiatrist saw those who were scored moderate to marked depression, to confirm and treat the depression. The diagnosis of depression was based on the DSM IV criteria. The patients and non-stroke control subjects were also screened for dementia using the Elderly Cognitive questionnaire by Kua & Ko.<sup>19</sup>

The non-stroke control subjects was recruited from the Hypertension Clinic of University Malaya Medical Centre. The non-stroke control subjects was matched for age, sex, race and medication with the stroke patients; as the anti-hypertensive drugs have known depressive side effects. The non-stroke control subjects were presented with the same evaluative processes, in the same clinical environment.

## RESULTS

Eighty stroke patients consisting of 50 males and 30 female were included in the study. The average age was 58.6 years (SD  $\pm$  12.5), ranging from 22 to 81 years. The 80 non-stroke control subjects were matched by age, sex, ethnic origin and medication. The age range of the control subjects was 35 to 80 years. The male to female sex ratio of the stroke patients was 5 : 3. The ethnic composition was: Chinese (51%), Indians (25%), and Malays (22%). The stroke consisted of the following subtypes: lacunar infarction (29%), intracerebral hemorrhage (15%), large artery infarct (23%) and cardioembolic infarct (9%), undetermined (24%).

Of the 80 stroke patients, 53 (66%) had depression. Of the 53 with depression, 41 (51%) were mild, 9 (11%) were moderate and 3 (4%) were severe. None of the subjects in the control group had depression. There was significant difference between the prevalence of depression in the stroke and non-stroke group ( $\chi^2(3)=79.252$ ,  $p<0.5$ ). There was no significant difference in the prevalence of post-stroke depression between the sexes. In the 53 patients with depression, 31 (58.5%) were males and 22 (41.5%) were females. Sixty-two percent (31/

50) of the male and 73% (22/30) of the female stroke patients had depression. Sixteen percent (8/50) of the males and 13% (4/30) of the female stroke patients had moderate to severe depression.

The racial composition of the 53 patients with depression were Chinese 34 (65%), Malays 10 (19%), Indians 6 (11%) and others 3 (6%). The racial composition of the 12 patients with moderate to severe depression were Chinese 4 (33%) and Malays 8 (67%). The prevalence of moderate to severe depression among the different races were: Chinese 4/41 (10%), Malays 8/18 (44%), and Indians 0/20 (0%). None of the stroke patients or non-stroke control subjects had past or family history of mental illness.

## DISCUSSION

The patients in this study were not significantly different from the stroke registry from the University Malaya Medical Centre previously reported.<sup>20</sup> The Malaysian stroke patients in this study were distinguished by younger age, more lacunar infarction, and less cardioembolic infarct when compared with the Caucasian population<sup>20</sup>, and its multi-ethnic composition. In spite of these differences with the Caucasian population, this study demonstrated that depression appeared to be common among Malaysian stroke patients 3-6 months after cerebrovascular accident. The prevalence rate of depression in this study falls into the range of the published studies<sup>6-11</sup>, mild in 51% and moderate to severe in 15%.

There appeared to be no gender difference in the prevalence rate of depression in this study although it has been reported by some authors.<sup>21</sup> The apparent high rates of moderately to severe depression among Malays and Chinese as compared to Indians require further evaluation. The attributed determinants affecting the frequency of depression included physical factors such as left anterior cerebral infarction, dysphasia, physical dependence, intellectual impairment, age and cerebral atrophy as well as psychosocial factors such as quality of social support and social contacts outside the immediate family. Differences associated with social-cultural variations among the various races may influence the development of depression.<sup>22-24</sup>

This study was done 3-6 months post-stroke. Time lapsed after stroke has also been mentioned to be a variable in the prevalence of post-stroke depression.<sup>24,25</sup>

None of the patients with depression in this study has been previously diagnosed and treated.

This is likely in part, due to lack of awareness. The symptom of depression may be masked by somatic symptoms or be misinterpreted as dementia. The psychosocial problems of depression that occurs for many people with stroke creates a major challenge for enhancing efforts to re-enter the home, family and community. Depression not only resonates the emotion state of these patients who have suffered stroke, it is likely to also affect their rehabilitation and eventual functional outcome.<sup>26</sup> Depression if not treated may become chronic<sup>24,25</sup>, thus affecting the functional outcome of the stroke. Depression has also been shown to be a significant factor in the long term mortality.<sup>27</sup>

### ACKNOWLEDGEMENT

The authors would like to thank Dr BF Sim, Department of Medicine and Dr Tungku Nor Taayah, Department of Allied Health Science, University Malaya Medical Centre; Professor Saroja K, Department of Psychiatry, Universiti Kebangsaan Malaysia for their help.

### REFERENCES

- Bonita R. Epidemiology of stroke. *Lancet* 1992;339:342-4.
- Sacco RL. Risk factors and outcomes for ischemic stroke. *Neurology* 1995;45(Suppl1):S10-4
- Jerntrop P, Berglund G. Stroke registry in Malmo, Sweden. *Stroke* 1992;23:357-61.
- Kojima S, Omura T, Wakamatsu W, et al. Prognosis and disability of stroke patients after 5 years in Akita, Japan. *Stroke* 1990;21:72-7.
- Astrom M, Asplund K, Astrom T. Psychosocial function and life satisfaction after stroke. *Stroke* 1992;23:527-31
- House A, Dennis M, Morige L, et al. Mood disorders in the year after first stroke. *Br J Psychiatry* 1991;158:83-92.
- Morris PLP, Robinson RG. Prevalence and course of depressive disorders in hospitalized stroke patients. *Int J Psychiatry Med* 1990;20:349-64.
- Robinson RG, Szetela B. Mood changes following left hemisphere brain injury. *Ann Neurol* 1981;9:447-53.
- Robinson RG, Price TR. Poststroke depressive disorders: a follow-up study of 103 patients. *Stroke* 1982;13:635-41.
- Bauer M, Gans JS, Harley JP, et al. Dexamethasone suppression test and depression in a rehabilitation setting. *Arch Phys Rehabil* 1983;64:421-2.
- Burvill PW, Johnson GA, Jamrozik KD, Anderson CS, Stewart-Wynne EG, Chakera TMH. Prevalence of depression after stroke: The Perth Community Stroke Study. *Br J Psychiatry* 1995;166:320-7
- Francisco An Overview of post-stroke depression. *New Jersey Medicine* 1993;90:686-9
- Venketasubramanian N. The epidemiology of stroke in ASEAN countries - A review. *Neurol J Southeast Asia* 1998;3:9-14.
- Cheng XM, Ziegler DK, Lai YH et al. Stroke in China, 1986 through 1990. *Stroke* 1995;26:1990-4
- Kay R, Wong KS. Epidemiology of stroke among Chinese. *Neurol J Southeast Asia* 1998;3:1-4.
- Zhang Q. A correlative study on post-stroke depression and CT, physical, psychological and social parameters. *Chin J Neurol Psychiatry* 1992;25:203-7.
- Fuh JL, Liu HC, Wang SJ, Liu CY, Wang PN. Post-stroke depression among the Chinese elderly in a rural community. *Stroke* 1997;28:1126-9.
- Zung WWK. A self-rating depression scale. *Arch Gen Psychiatry* 1965;12:63-70.
- Kua E.H & Ko S. A questionnaire to screen for cognitive impairment among elderly people in developing countries. *Acta Psychiatr Scand* 1992;85:119-22
- Ng WK, Goh KJ, George J, Tan CT, Biard A, Donnan G. A comparative study of stroke subtypes between Asians and Caucasians in two hospital-based stroke registries. *Neurol J Southeast Asia* 1998;3:19-26.
- Paradiso S, Robinson RG. Gender differences in poststroke depression. *J Neuropsychiatry Clin Neurosci* 1998;10:41-7
- Zhang, D. Depression and culture: A Chinese perspective. *Can J Counseling*, 1995;29:227-33.
- Robinson RG, Starr LB, Kubos KL, Price TR. A two year longitudinal study of post-stroke mood disorders: Finding during the initial evaluation. *Stroke* 1983;14:736-41.
- Astrom M, Adolfsson R, Asplund K. Major depression in stroke patients: A 3-year longitudinal study. *Stroke* 1993;24:976-982.
- Robinson RG, Starr LB, Price TR. A two year longitudinal study of mood disorder following stroke, prevalence and duration at six months follow-up. *Brit J Psychiat* 1984;144:256-262.
- van de Weg, F. B.; Kuik, D. J.; Lankhorst, G. J. Post-stroke depression and functional outcome: A cohort study investigating the influence of depression on functional recovery from stroke. *Clin Rehabil* 1999;13:268-272
- Morris PLP, Robinson RG, Andrzejewski P, Samuels J, Price TR. Association of depression with 10-year poststroke mortality. *Am J Psychiatry* 1993;150:124-9