A STUDY OF DEPRESSION FOLLOWING STROKE

A. EBRAHIM HAROON

SUMMARY

A selected sample of 71 stroke patients were divided into 'depressed' and 'not depressed' based upon their performance in a self designed scale. The two groups were compared for a variety of clinical, socio-demographic and neuropathological factors. The 'depressed' group had a higher frequency of thrombotic strokes and alcohol abuse. The 'not depressed' group had a higher prevalence of family history of stroke. The findings are discussed from the vantage of clinical viewpoint.

Emotional reactions such as anxiety and depression are common in the medically ill, physically disabled and among the elderly (Kay et al., 1964; Ramachandran, 1980; Klerman, 1981). Hawton (1981) reported that on follow-up, medically ill patients with psychological symptoms had a significantly higher mortality rate compared to those without them.

Stroke is a disease causing considerable disability. It is characterised by lesions of the brain which may be detected by clinical and radiographic methods. Age has been reported to be an important factor in the development of stroke. A closer look at emotional disorders following stroke may show the relative contribution of such factors. Pointers in this direction have come from the studies of Folstein et al. (1977) and those of Robinson and Szetela (1981). They showed that stroke patients were significantly more depressed than non-stroke patients with comparable amounts of physical and cognitive disabilities. Thus, it would be rational to conceptualise depression following stroke as a multifactorial entity.

It is useful to recognize such depression because it is responsive to anti-depressants and the possible risk of suicide is increased if the condition goes undetected (Robinson et al., 1982). Emotional problems such as depression have been associated with poor co-operation in rehabilitation (Adams and Hurwitz, 1963; Lishman, 1928; Binder, 1984). Binder (1984) has also emphasized the role of emotional problems such as depression in understanding behavioural outbursts among stroke patients.

In an earlier publication (Haroon, 1986), the author reported that depression was common in a selected group of stroke patients and that it showed a relationship to the location of lesion. In this study, a different method is used to determine the relationship between the clinical, socio-demographic and neuropathological factors of stroke and post-stroke depression.

Materials and Method

Seventy-one patients admitted to the medical wards of Government General Hospital, Madras during the months of July to September, 1986 were selected according to the following criteria:

a. The patient should have exhibited signs and symptoms suggestive of a clinical diagnosis of 'stroke' based on a checklist drawn-up from the description by Adams and

1. Medical Officer, Govt. Primary Health Center, Thirukkalukundram, Chengelpet Distt., Tamil Nadu.
b. The patient should have been conscious for the major part of the post-stroke period.

c. The patient should have been accompanied by a relative who was cooperative, could converse in English or Tamil and who had attended the patient for the major part of the post-stroke period.

d. Absence of the following:

(i) Life threatening physical complications preceding, occurring concurrently or following the stroke (e.g. stroke in a patient who underwent cardiac surgery or trauma, concomitant renal failure and its treatment).

(ii) Diagnostic uncertainty after routine investigations and neurological opinion.

The clinical presentation of the patients was as follows: hemiplegia (100%), sensory deficit (31%), dysarthria (39%), dizziness (9%), visual field defects (6%) and diplopia (1%). The presentation of language disturbances (43.5%) was as follows: anterior aphasias (27.5%), posterior aphasias (1.5%) and mixed types (19%). All the patients were right handed individuals.

Patients residing in the city of Madras and its immediate suburbs were selected. The mean age of this group was 53.78 years (S.D. 12.97; range: 22 to 75 years). Of these, 47 (66%) were males. About 83% of the patients were Hindus. The socio-economic status was measured using the scale of Gupta and Sethi (1978). The subjects were predominantly of lower socio-economic classes.

Because of possible cognitive dysfunctions and language disturbances in stroke patients, standardized observer-rated and self-rated scales were not used. Some authors have opined that the neuro-vegetative disturbances following stroke may overlap with those that follow depression. Further, the assessment of symptoms such as psychomotor activity is difficult in a bedridden patient with paralysed limbs. By using the popular Hamilton’s Rating Scale, the mean depression scores in post stroke patients was 16.6 in one study (Lipsey et al., 1986) and 9 in another (Robinson et al., 1983). Since Hamilton’s Rating Scale had correlated significantly with behaviour rating by nurses (Robinson and Szetela, 1981), it was decided to take into account only overt, observable behaviour for assessment of depression. A self-designed scale (given in Appendix I) was used.

The relatives of patients were informed about the objectives of the study before interviews were scheduled. All the interviews were conducted between 2:00 and 4:00 P.M. The information obtained from the patient and relative, the observation of the patient’s behaviour by the interviewer and the information from the ward treating staff were used in scoring the patient on the rating scale for depression. In case of disagreement, greater importance was given to the relative’s report. However, such disagreements were minimal. The patient was seen again after the interview if further clarifications were required.

The individual ratings on all items of the scale were summed up to give the total score. The maximum possible total score was 17. The scores ranged from 0 to 13. The mean score was 6.49 (S.D. 2.99) and the median was 6.31. The diagnosis of ‘depression’ was made based on the following criteria:

a. The total score should be above the mean score of the entire sample (i.e. 7 and above).

b. The patient should have scored in at least 4 of the six symptoms chosen for measurement.
In all, 29 patients fulfilled the above criteria and were considered ‘depressed’ and the remaining 42 patients were considered ‘not depressed’. The ‘depressed’ and ‘not depressed’ groups were compared for the individual symptoms of the self-designed scale. The ‘depressed’ group had higher mean scores than ‘not depressed’ for all symptoms. The scores were (mean ± S.D.): (a) Depressed mood: 2.45±0.51 vs. 1.69±0.99 (t=5.36, p<0.001); (b) Suicidal behaviour: 1.86±1.19 vs. 0.52±0.92 (t=5.36, p<0.001); (c) Response to visitors: 1.10±0.67 vs. 0.26±0.54 (t=5.84, p<0.001); (d) Response to treatment: 0.72±0.70 vs. 0.21±0.57 (t=3.45, p<0.001); (e) Agitation: 1.10±0.97 vs. 0.71±0.83 (t=1.80, p<0.10) and (f) Crying spells: 2.10±0.77 vs. 1.12±0.94 (t=4.6, p<0.001).

In addition, the following details were also elicited: Duration since onset of stroke (in days); clinical localisation of lesion (sidedness, cortical/subcortical); disability (loss of independence in the activities of daily living such as bathing, eating, dressing, etc.); mode of onset (less than one hour, 1-24 hours and more than 24 hours); thrombotic stroke (history of transient ischaemic attacks, variable modes of onset, onset/progression occurring during sleep or shortly after rising, evidences of hypertension, diabetes and athero-atheromatous diseases elsewhere such as cardiovascular disease, peripheral arterial thrombosis); non thrombotic stroke (embolic haemorrhagic), personal and family history of stroke; personal and family history of mental illness; alcohol and tobacco abuse (D.S.M. III Criteria), presence of distressing life events in the past year, orientation and memory disturbances (measured by a four point scale already published by Haroon, 1986).

The ‘depressed’ and ‘not depressed’ groups were compared using parametric and non-parametric tests for all the variables mentioned above.

Results

Thrombotic lesion and alcohol abuse were frequent in the ‘depressed’ group. Family history of stroke was more prevalent in the ‘not depressed’ group (the figures are given in Table 1). There were no differences between the groups for all other variables mentioned above.

Table 1.

|                  | Depressed (n=29) | Not depressed (n=42) |
|------------------|----------------|---------------------|
| Type of stroke   |                |                     |
| Thrombotic       | 27             | 30                  |
| Non-thrombotic   | 2              | 12                  |
| $X^2=3.88$, d.f. =1, N.S. |
| Alcohol abuse    |                |                     |
| Present          | 9              | 4                   |
| Absent           | 20             | 38                  |
| $X^2=3.96$, d.f. =1, p<0.5 |
| Family history of stroke |
| Present          | 2              | 15                  |
| Absent           | 27             | 27                  |
| $X^2=6.32$, d.f. =1, p<0.09 |

($X^2$—Yate’s correction applied when necessary).

Discussion

The relationship between thrombosis and ‘depression’ indicates the importance of the role of pathogenetic factors of stroke in the development of post-stroke depression. Thrombosis may be related to ‘depression’ through other factors such as age, presence of a previous history of focal deficits, and systemic disorders as hypertension, diabetes and cardiac disease. But the fact that none of these factors by themselves showed any relationship to depression makes such a possi-
bility unlikely. Newer brain imaging techniques may be useful for further exploration in this direction.

It is hardly surprising that alcohol abuse shows a relation to depression developing after stroke. This raises several possibilities. First, it may point to depression-prone personalities in which both alcoholism and post-stroke depression coexist. Secondly, the feelings of guilt, despair and hopelessness associated with alcoholism may be worsened by the occurrence of stroke. Thirdly, the depression may be due to an interruption of alcohol consumption independent of the stroke process. Fourthly, the site of the lesion may determine the degree of interaction between alcoholism and post-stroke depression. Clearly this relationship needs to be studied in greater detail.

The relationship between a positive family history of stroke and 'not depressed' stroke patients is interesting.

The present data do not clarify the possibility of genetic influences underlying this occurrence. The previous occurrence of stroke in a family member may have inculcated a better general understanding of the stroke experience in the current stroke patient and fostered more effective coping strategies. If this is plausible, studies on the effectiveness of such approaches as group therapy with stroke patients may shed some light on this point.

In contrast to the earlier study (Haroon, 1986), the present study showed no relationship between location of lesion and depression. This is probably related to differences in the diagnostic aspects of depression.

In conclusion, the findings of the study point to the multifactorial nature of post-stroke depression. A better understanding of the number of factors involved and how they interact will facilitate better awareness and management of such depression.

ACKNOWLEDGEMENTS

The author wishes to thank the Dean of Madras Medical College and the Professor and Staff of the Department of Medicine at Madras Medical College for their permission to conduct the study. The author gratefully acknowledges the help of the staff of the Institute of Mental Health in Madras.

REFERENCES

Adams, G. F. and Hurwitz, L. J. (1963). Mental barriers to recovery from strokes. Lancet, 2, 533-537.

Adams, R. D. and Victor, M. (1985). Cerebrovascular Disorders. In: Principles of Neurology, (Eds) Adams, R. D. and Victor, M., Third Edition. New York: McGraw-Hill.

Binder, L. M. (1984). Emotional problems after stroke. Stroke, 15, 174-177.

Folstein, M. F., Maiberger, R. and McHugh, P. R. (1977). Mood disorder as a specific complication of stroke. Journal of Neurology, Neurosurgery and Psychiatry, 40, 1018-1020.

Gupta, S. C. and Sethi, B. B. (1978). Development of a Socioeconomic scale for urban population. Indian Journal of Psychiatry, 23, 371-379.

Haroon, A. B. (1986). Psychiatric disturbances following stroke. Indian Journal of Psychiatry, 28, 335-341.

Hawton, K. (1981). The long term outcome of psychiatric morbidity detected in general medical outpatients. Journal of Psychosomatic Research, 25, 237-243.

Kay, D. W., Beamish, P., Roth, M. (1964). Old age mental disorders in Newcastle-upon-Tyne Part II: A study of possible medical causes. British Journal of Psychiatry, 110, 668-682.

Klerman, G. L. (1981). Depression in the medically ill. In : The medically ill patient : The Psychiatric Clinics of North America, Strain, J. J. (Ed) Volume 4, Number 2, Philadelphia: W. B. Saunders.

Lipton, J. R., Spencer, W. G., Rabins, P. V. and Robinson, R. G. (1986). Phenomenological comparison of post-stroke depression and functional depression. American Journal of Psychiatry, 143, 527-529.

Lishman, W. A. (1978). Cerebrovascular disorders.
A STUDY OF DEPRESSION FOLLOWING STROKE

In: Organic Psychiatry: The psychological consequences of cerebral disorder, Lishman, W. A., (Ed) Oxford: Blackwell, 459-522.
Ramachandran, V. (1980). Psychiatric disorders in subjects in Philosophy. Madras: University of Madras.
Robinson, R. G. and Szetela, B. (1981). Mood change following left hemispheric brain injury. Annals of Neurology, 9, 447-453.
Robinson, R. G. and Price, T. R. (1982). Post-stroke depressive disorders: A follow-up study of 103 patients. Stroke, 13, 635-641.
Robinson, R. G., Starr, L. R., Kubos, K. L. and Price, T. R. (1983). A two-year longitudinal study of post-stroke mood disorders: findings during the initial evaluation. Stroke, 14, 736-741.

APPENDIX I

1. **Depressive mood:**
   0—not more than usual levels.
   1—revealed only on detailed questioning.
   2—revealed by superficial questioning.
   3—revealed without questioning.

2. **Crying spells:**
   0—not present.
   1—present, but not daily.
   2—present daily, but on and off.
   3—present, provoked or expected any time.

3. **Suicidal behaviour:**
   0—absent or denied.
   1—indicates disinterest in life.
   2—indicates wish to die and passive death wish.
   3—active suicidal ideas present.

4. **Agitation:**
   0—absent.
   1—restless and fidgety, but lying in bed.
   2—very restless and tries to get out of bed.

5. **Response towards visitors:**
   0—responsive as usual.
   1—less responsive.
   2—not responsive.

6. **Response to treatment:**
   0—responds well with hope.
   1—responds without hope.
   2—not responsive.