

# Post-discharge follow-up of stroke patients at Grootte Schuur Hospital — a prospective study

D. A. WHITELOW, C. J. MEYER, S. BAWA, K. JENNINGS

**Abstract** A survey of 59 stroke patients was undertaken between 3 and 6 months after the event to determine whether a weekly stroke round would improve the rate of referral for rehabilitation. Comparison with a previous survey at Grootte Schuur Hospital showed a marked improvement (40% for physiotherapy and 10% for occupational therapy v. 76% and 50% respectively). A comparison of referral rates between younger (< 65 years old) and older patients (> 65 years old) revealed a significantly higher rate of referral among the younger patients. Attendance for both groups was low (approx. 7 sessions per 3 months). Social work was an important requirement and 60% of all patients expressed a need for more help. Social needs of older and younger patients differ. Despite the improved referral rate the rehabilitation of stroke patients is unsatisfactory, mainly because of transport difficulties. Methods should be investigated to establish rehabilitation centres in the community to overcome this impasse.

*S Afr Med J* 1994; 84: 11-13.

Cerebrovascular disease is responsible for considerable morbidity and mortality.<sup>1,2</sup> There is considerable evidence that rehabilitation improves the functional outcome.<sup>3,5</sup> A 1984 study from this institution revealed inadequate referral and treatment of stroke patients.<sup>6</sup> During 1988 the Department of Geriatrics at UCT instituted a stroke round, based on the Mount Vernon experience,<sup>7</sup> at Grootte Schuur Hospital in an attempt to improve the rate of referrals to the rehabilitative services. We report on the findings of a follow-up survey of randomly selected patients with completed strokes. The survey was carried out 3 - 6 months after the event. The aim was to determine the rate of referral to rehabilitative services, the extent to which these services were used, the functional status of patients and the incidence of late mortality following a stroke, and to examine the effect which age may have on these parameters.

## Materials and methods

Once a week every stroke patient admitted to Grootte Schuur Hospital was assessed by a multidisciplinary team consisting of a physician, physiotherapist, occupational therapist, speech therapist and community liaison sister. Patients were graded according to the Rankin

scale<sup>8</sup> (Table I) and their rehabilitative needs assessed. Recommendations were then made for further therapy or care, depending on these needs.

TABLE I.  
Rankin disability grading

Grade	Description
1	No significant disability
2	Slight disability, unable to carry out some previous activities, but able to look after own affairs without assistance
3	Moderate disability, requiring some help but able to walk without assistance
4	Moderately severe disability, unable to walk without assistance and unable to attend to own bodily needs without assistance
5	Severe disability, bedridden, incontinent and requiring constant nursing care and attention

Between 3 months and 6 months after the event, 70 patients who had suffered a stroke graded 3 to 5 on the Rankin scale were selected for follow-up by means of random numbers. Patients who did not live locally, or who were institutionalised or bedridden before the stroke, were excluded before randomisation.

Eight patients could not be traced, while refusal to participate or inadequate information prevented the inclusion of 3 other patients. Fifty-nine patients were thus included in this study. In those cases where a patient had died, information was elicited from a family member. Data were obtained by means of a standard questionnaire administered by the authors, and functional status was again graded according to the Rankin scale. It was decided to maintain all 5 grades because although individuals in grades 4 and 5 are severely disabled, individuals in grade 5 require virtually continuous care and place considerably more demands on caregivers. Data were also obtained on perceived needs and mortality rates in the post-discharge period. Physiotherapy and occupational records were studied to determine both the rate of referral and the number of sessions attended by patients. Speech therapy has already been reported on.<sup>9</sup>

## Statistical analysis

The chi-square test was used in all cases except where a subset consisted of fewer than 6 patients, when Fisher's exact test was applied. Data were processed by means of the Epistat package.

## Results

Twenty-eight patients in the present study were between 40 and 65 years of age (referred to as the 'younger stroke victims') and 31 were over 65 years of age (older stroke victims). The majority of the patients were 'coloured'.<sup>10</sup>

## Rate of referral and use of hospital-based rehabilitative services

Twenty-three of the 28 (82%) younger patients were referred to physiotherapy, while 17 of the 31 (55%;

Department of Medicine, Tygerberg Hospital and University of Stellenbosch, Parowvallei, CP

D. A. WHITELOW, F.C.P. (S.A.), PH.D. (LOND.)

Department of Medicine, 2 Military Hospital, Wynberg

C. J. MEYER, M.B. CH.B.

Department of Medicine, Livingstone Hospital, Port Elizabeth

S. BAWA, M.B. CH.B.

Department of Medicine, Cecilia Makiwane Hospital, Mdantsane, Ciskei

K. JENNINGS, M.B. CH.B.

$P < 0,04$ ) elderly stroke patients were referred. All 23 younger patients presented for physiotherapy; 7 of the 17 (41%;  $P < 0,001$ ) older patients actually received therapy.

The mean number of sessions attended by patients treated at Groote Schuur Hospital was 7,5 per 3 months (range 1 - 20) for the younger group and 6,9 per 3 months (range 2 - 16) for the older group (Table II).

**TABLE II.**  
**Rate of referrals and number of treatment sessions in 3 months post-discharge in survivors of completed strokes**

Age (yrs)	No. of patients	Physiotherapy				Mean No. of sessions (range)
		Referrals No.	Referrals %	Patients treated No.	Patients treated %	
< 65	28	23	82	23	100	7,3 (1 - 20)
> 65	31	17	55*	7	41†	6,9 (2 - 16)
Occupational therapy						
< 65	28	20	71	20	100	NA
> 65	31	14	45‡	1	7	NA

\* $P < 0,04$ ; † $P < 0,001$ ; ‡ $P < 0,07$  (NS) when compared with respective findings in patients under 65 years of age.

Twenty of 28 (71%) younger stroke victims were referred to occupational therapy, and all received therapy. Fourteen of 31 (45%) older patients were referred and 1 (7%;  $P < 0,001$ ) actually received therapy.

Twenty-one (75%) of the younger stroke victims had seen a social worker, compared with 3 (10%;  $P < 0,001$ ) in the older group.

### Perceived needs of stroke victims and their families

Eleven families (40%) of the young stroke victims felt that they required education to cope, while 4 families (13%) of older victims expressed this need.

Thirty-five (60%) of all stroke patients expressed a need for more help from social workers. The numbers of patients who expressed this need were similar in both groups.

More than 50% of all families felt that transport to hospitals or to rehabilitation facilities was inadequate.

Thirteen families (47%) of younger stroke victims and 5 families (17%;  $P < 0,02$ ) of older patients had financial problems. Ten (36%) of the younger stroke victims were breadwinners before the event; 4 subsequently returned to work.

All older stroke victims were in receipt of a pension, but in 5 cases (17%) a family member was forced to stop working to care for the patient.

### Rankin score, dependency and mortality rates

Thirteen (42%) of the older stroke victims had a Rankin score of 5 compared with 3 of the younger stroke victims (11%;  $P < 0,007$ ) (Table III). Sixteen (52%) of the older individuals were dependent on their families, while only 5 (18%;  $P < 0,015$ ) of the younger stroke victims were dependent on their families. Younger stroke victims were more likely to be dependent on a number of sources for support. Only 2 patients who required constant care had been institutionalised (Table IV). Fourteen (45%) of the over 65-year-old cohort had died, compared with 6 patients (21%;  $P = \text{NS}$ ) in the younger age group, a mean mortality rate of 34% at 6 months.

**TABLE III.**  
**Rankin score according to age of patients**

Rankin score	< 65 yrs	> 65 yrs
1	5	3
2	6	3
3	6	4
4	8	8
5	3	13 ( $P < 0,001$ )
	28	31

**TABLE IV.**  
**Caregivers of survivors followed up at between 3 and 6 months**

Caregiver	< 65 yrs	> 65 yrs
Spouse	10	7
Family	5	15
Self	—	2
Institution	—	2
More than 1 source	13	5
	28	31

### Discussion

The overall rates of referral for physiotherapy and occupational therapy were 68% and 58% respectively, distinctly better than previously reported from this institution.<sup>6</sup> This can be attributed to the 'stroke round' which directed patients to rehabilitation and alerted the ward staff to the need for rehabilitation. The discrepancy between the rates of referral for younger and older patients is probably also a result of this service. Patients inactive before the present event or those unable to co-operate with a therapist were not recommended for referral. The average number of sessions attended (7,4 in 3 months) is disappointing. Several factors, including transport, the inability of the family to provide escorts, depression and loss of insight by the patient<sup>11,12</sup> all contributed to the poor attendance. Elderly patients appear not only more handicapped by the stroke but also experience more problems in reaching therapists. Transport would seem to be a major factor and ways to overcome this impasse should be explored. The lack of adequate hospital facilities and the high cost of such care make it imperative that community-based rehabilitation centres be developed to provide rehabilitation for the patient and guidance to the family and caregiver.

Many physicians fail to appreciate the social disruption caused by a stroke; this is demonstrated by both objective and subjective criteria. Financial pressure was more apparent among the younger patients, a significant number of whom were breadwinners. The loss of social interaction has been documented previously,<sup>13,14</sup> and is associated with poor levels of pre-stroke activity and social support; there is only a poor correlation with physical disability.<sup>14</sup> Every stroke victim and his/her family should be counselled by a social worker to ensure that social isolation is avoided. Forty-seven per cent of younger patients were dependent on a number of caregivers; this suggests that an inadequate support system exists for these individuals. Twenty-one (67%) of elderly stroke patients were either Rankin grade 4 or 5, yet only 2 were in institutions. Caregivers, for whom there is no formal training, are thus required to care for individuals who are totally dependent. Ten to twenty per cent of all stroke victims in the USA are institutionalised.<sup>13,15</sup>

The mortality rate is comparable with those published in other studies.<sup>16,17</sup> Cardiovascular disease and the severity of the initial stroke are important prognostic factors.<sup>16</sup> These findings suggest that in-hospital assess-

ment and intervention by a rehabilitation team improve the rate of referral of stroke patients, but other factors such as transport prevent the patients making full use of the services available. The importance of the social worker is again emphasised, while there is a need for someone in the rehabilitation team to undertake the task of educating both family and patient.

Dr J. Bollmann also participated in this research but could not be traced; her help is gratefully acknowledged. Patient assessment and the advice of the physiotherapists and occupational therapists on the weekly stroke round were invaluable. Sr Kay Bucholtz, the community liaison sister, made a special contribution to the success of these rounds.

REFERENCES

1. Ford AB, Katz S. Prognosis after strokes: Part I. A critical review. *Medicine (Baltimore)* 1966; **45**: 223-236.
2. Disler PB, Epstein L, Buchanan-Lee B, et al. Variations in mortality of the coloured, white and Asian population groups in the RSA, 1978 - 1982. *S Afr Med J* 1987; **72**: 408-411.
3. Indredavik B, Bakke F, Solberg R, Rokseth R, Hacheim LL, Holme I. Benefit of a stroke unit: a randomised controlled trial. *Stroke* 1991; **22**: 1026-1031.
4. Reding JM, McDowell FH. Focused stroke rehabilitation pro-

- grams improve outcome. *Arch Neurol* 1989; **46**: 700-701.
5. Stevens RS, Ambler NR, Warren MD. A randomised controlled trial of a stroke rehabilitation ward. *Age Ageing* 1984; **13**: 65-75.
6. Putterill JS, Disler PB, Jacka E, Hoffman MN, Sayed AR, Watermeyer GS. Coping with chronic illness: Part II. Cerebrovascular accidents. *S Afr Med J* 1984; **65**: 891-893.
7. Stone SP. The Mount Vernon stroke service. *Age Ageing* 1987; **16**: 81-88.
8. Rankin J. Cerebral vascular accidents in patients over the age of 60. II: Prognosis. *Scott-Med J* 1957; **2**: 200-215.
9. Tilney D. The follow-up speech therapy service for stroke patients who have been admitted to Groote Schuur Hospital. Hons Dissertation, Department of Logopaedics, University of Cape Town, 1988.
10. Bourne DE. Nomenclature in a pigmentocracy — a scientist's dilemma. *S Afr Med J* 1989; **76**: 185.
11. Robinson RG, Price TR. Post-stroke depressive disorders: a follow-up of 103 patients. *Stroke* 1982; **13**: 635-641.
12. De Jong G, Branch LG. Predicting the stroke patient's ability to live independently. *Stroke* 1982; **13**: 648-655.
13. Gresham GE, Fitzpatrick TE, Wolf PA, McNamara PM, Kannel WB, Dawber TR. Residual disability in survivors of stroke. The Framingham Study. *N Engl J Med* 1975; **302**: 954-956.
14. Christie D. Aftermath of stroke: an epidemiological study in Melbourne, Australia. *J Epidemiol Community Health* 1982; **36**: 123-126.
15. Feigenson JS, McCarthy ML, Meese PD, et al. Stroke rehabilitation I: Factors predicting outcome and length of stay — an overview. *NY State J Med* 1977; **77**: 1426-1434.
16. Lude DT, Skilbeck CE, Langton Hower R, Lood VA. Long-term survival after stroke. *Age Ageing* 1984; **13**: 76-82.
17. Stevens RS, Ambler NR. The incidence and survival of stroke patients in a defined community. *Age Ageing* 1982; **11**: 266-274.

## Brain abscess in childhood

### A 25-year experience

Z. DOMINGO, J. C. PETER

**Abstract** The presentation, treatment and outcome of 98 children with brain abscesses at Red Cross War Memorial Children's Hospital, Cape Town, is reviewed. Middle ear disease and trauma were the commonest sources of infection in 60% of patients. The usual presentation was that of meningitis and it is recommended that computed tomography be performed before lumbar puncture in those patients with associated middle ear disease, trauma or sinusitis. With early treatment of both the abscess and the underlying source of infection, the mortality rate was 16%.

*S Afr Med J* 1994; **84**: 13-15.

Despite improvements in primary health care facilities and socio-economic circumstances, brain abscess remains a common paediatric disease in South Africa, and is associated with a high mortality rate if not diagnosed early.

Despite the fact that computed tomography has allowed brain abscess to be diagnosed with relative ease, it is still unfortunately only the larger centres in South Africa that have this facility. Practitioners must always

maintain a high index of clinical suspicion if brain abscesses are to be diagnosed early and the unnecessary danger of lumbar puncture avoided.

We present our 25-year experience of paediatric brain abscesses in the hope that this will contribute to a heightened awareness of this potentially lethal condition.

### Methods

#### Case material

The clinical presentation, diagnosis and treatment of children presenting to the Department of Paediatric Neurosurgery at Red Cross War Memorial Children's Hospital were retrospectively analysed.

#### Incidence, age and gender

Of the 98 patients treated during the 25-year period 1966 - 1991, 61 were boys and 37 girls. The mean age of presentation was 8 years (range 3 months to 14 years). Children with post-meningitic and idiopathic brain abscesses presented at an earlier age (8 months and 6 years respectively).

#### Aetiology

The underlying aetiology of the abscesses is listed in Table I. Of importance is the large number of implantation abscesses secondary to trauma. Of the 26 abscesses in this group, 12 followed compound depressed fractures of the skull and 14 developed after penetrating skull trauma. A knife was responsible for this in only 3

Department of Paediatric Neurosurgery, Red Cross War Memorial Children's Hospital and University of Cape Town

Z. DOMINGO, M.B. CH.B., F.C.S. (S.A.)

J. C. PETER, M.B. CH.B., F.R.C.S.