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HOW DO STROKE PATIENTS FARE WHEN DISCHARGED STRAIGHT TO THEIR HOMES? A CONTROLLED STUDY ON THE SIGNIFICANCE OF HOSPITAL FOLLOW-UP AFTER ONE MONTH

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In our experience, stroke patients discharged straight to their homes sometimes showed marked deterioration. We investigated whether this negative course of events could be prevented by means of follow-up visits entailing extensive testing and resultant measures one month after discharge. The patients in our study included a selection of mild cases with a short length of hospital stay. Forty-six patients returned to the stroke unit on a follow-up visit, and 49 patients made up the control group. The groups were compared after 3 months, by means of questionnaires. The results did not show any definite difference between the groups. However, after 3 months we detected depressions in 13 patients in the study group and in 11 patients in the control group, most of them untreated. The study points to a need for follow-up aimed specifically at detecting depression.

Key words: stroke, follow-up, depression, outpatient visit.

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INTRODUCTION

With around 35,000 people afflicted annually, stroke is one of the most prevalent diseases in Sweden. Most patients are hospitalized. Around one-third of those surviving are provided with inpatient rehabilitation, whilst the majority are discharged straight to their homes. During recent years selected patients from the latter category have been followed up unsystematically after one month. Our experience has been that without special testing, depression is sometimes overlooked, and that certain patients deteriorate or cease to improve following discharge.

The question was thus, whether by systematic evaluation of patients one month after discharge one could detect negative developments in time and thus take action which could improve the end result.

METHODS

St Göran Hospital AB is an emergency hospital with a catchment area covering parts of Stockholm's city centre and the western suburbs as well as the municipality of Ekerö, and encompassing around 300,000 inhabitants. At the Department of Internal Medicine 900–1000 patients annually are treated for stroke—around 70% of them at the stroke unit. After excluding approximately the 20% diagnosed TIA, about 200 remaining patients were discharged directly from the stroke unit to their homes. These patients with mild stroke were not given any more unified, inpatient rehabilitation, home rehabilitation or day care and constitute the material for our study. It is, above all, in this particular group that one fears negative developments could go unnoticed.

The study was approved by the Ethics Committee of the Karolinska Hospital. The inclusion of patients began in the middle of January 1996 and continued until the middle of June 1997—i.e. a duration of 17 months. During this time, breaks in the inclusion totalling $3\frac{1}{2}$ months occurred during a period of summer 1996 and during major public holidays. The follow-up visits took place on Wednesdays, and we had time to see 1–2 patients. In order to achieve an even flow, avoiding congestion or gaps, we chose not to randomize. At the stroke unit all patients satisfying the inclusion criteria were instead numbered consecutively during the period of inclusion, in accordance with the time the stroke was diagnosed, i.e. 1, 2, 3, 4 and again 1, 2, 3, 4, etc. Following discharge, patients Nos. 1 and 3 had to return to their GP in the normal way, since we were not able to include everyone in the study. Patients Nos. 2 and 4 were invited to take part in the study. The patients were issued with oral and written information on the content and aim of the study, and gave their authorization. Patient No. 2 (study patient) came to the department for an all-day follow-up visit one month after discharge, and this was followed up by means of interview forms 3 months after discharge. Patient No. 4 (control patient) was treated in accordance with the usual routine without follow-up visits, but was followed-up by means of interview forms after 3 months in the same way as the study patients.

In all, 222 patients were numbered, of whom 111 were included, 56 of them as study patients and 55 as control patients. Prior to discharge the study patients were tested as follows:

Motor function using the Motor Assessment Scale (MAS) (1);
Paresis status using the Scandinavian Stroke Supervision Scale (SSSS) (2);
Cognitive function using the Mini Mental Test (MMT) (3);
Depression using the Montgomery Åsberg Depression Rating Scale (MADRS) (4);
Activities of daily living (ADL) using the Katz ADL Index (5).

On the occasion of the follow-up visit after one month, the study patients were tested again using the same tests. Patients were served lunch and coffee, and had appointments with the following staff in accordance with a predetermined schedule: counsellor, physiotherapist, occupational therapist and nurse. Each member of staff conducted his/her own tests on the patients, after which the results and the need for any courses of action were discussed in consultation with the doctor. The patients had an appointment with the doctor for the purposes of discussion and exchange of information, and to wind up the day patients were invited to take part in a weekly information session for both hospitalized and discharged patients and their relatives.

Three months after discharge, study patients and control patients were sent a letter containing a questionnaire and a franked reply envelope. The questionnaire included:

The Nottingham Health Profile questionnaire on the quality of life (NHP) (6, 7);

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Table I. *Comparison of study and control patients at the start of the study*

Control patients	Study patients $n = 56$	Control patients $n = 55$
Gender, men (%)	50	53
Age mean/median	71/73	76/76
Mean length of hospital stay, days	5	5
Hypertension (%)	36	42
Diabetes (%)	9	20
ADL, Katz A or B (%)	98	98
Paresis status, mean value	8	8
Antidepressant medication, number of patients	4	3
Number of patients prescribed special therapeutic measures	15	15

Katz ADL: A = needs no help; B = needs help with one activity; C–G = needs help with increasing number of activities, including feeding in the case of G.
Paresis status: Maximum value, insignificant instances of paresis or none at all = 7. Minimum value, complete hemiparesis = 29.

A non-verbal quality-of-life scale in the form of a visual analogue scale (8);
Questions regarding healthcare consumption following discharge;
Questions regarding ADL capability;
Questions regarding the patient's satisfaction with care.

The NHP is a questionnaire measuring health-related quality of life. The 40 questions can be divided up into 7 different groups. Answers to each question are allocated points, and by adding up the points for all 30 questions, relating to the group's sleep disturbance, lack of energy, social isolation, emotional reaction and pain, a score is reached, which when in excess of a certain number indicates depression (9).

Reminders and amplifications were relayed by post and telephone.

Statistics

Descriptive statistics have been used for the comparison between study and control groups. Because of the age difference between the groups, linear regression analysis was used to test the statistical significance of these differences.

RESULTS

Comparison between the groups upon discharge

At the time of discharge the groups were comparable in most respects, including the number of measures prescribed, such as follow-up and sessions with a speech-therapist, occupational therapist, physiotherapist and neuropsychologist (Table I). The patients included a selection of mild cases with a short length of hospital stay. Hospitalization at the stroke unit is otherwise more in accordance with that of Swedish stroke units in general. All patients received early testing/rehabilitation and many recovered spontaneously. As far as age is concerned, the groups unfortunately were significantly different. Both the mean and median ages were lower in the study group.

Reminders and dropouts

In the case of missing or incomplete forms, we contacted 18 patients in the study group—one of them by letter and the remainder by phone. In the control group 24 patients were contacted—4 of them by letter followed-up by telephone contact, and the remainder only by phone.

With regard to the dropouts, the distribution of causes in the study and control groups was fairly similar (Table II).

The study patients' one-month visit

Fifty patients from the study group came for follow-up visits. The extensive test results for motor function, cognition and ADL led to action being taken in five cases: two patients were referred to speech therapists, one to a physiotherapist, one to a neuropsychologist, and one to social day care. One patient was offered contact with a physiotherapist, but declined. Most of the patients had improved since discharge. At that time, 17% had maximum scoring in the MAS compared with as many as 50% at the one-month visit. Comparable figures for MMT were 40% and 50%.

The test results for depression led to measures being taken in five cases: one patient received antidepressant medication and counselling; one received antidepressant medication, counselling and a further follow-up visit to the department; two were referred to the psychiatric outpatients' department; one was referred to his GP for a dementia investigation. One patient had made contact with a psychologist on her own initiative. The follow-up visits thus led to concrete courses of action in the case of 10 patients (20%), in addition to the general advice and tips which all received.

Follow-up after three months

After excluding the dropouts, there remained 46 patients in the study group and 49 patients in the control group (Table II), making up the actual study population. The responses in the

Table II. *Dropouts in study and control group from inclusion to conclusion of study*

Study group $n = 56$	Control group $n = 55$
4 refused to take part	2 refused to to take part in the study
3 immediately, 1 after the follow-up visit	
3 wrongly included:	
2 had not had a stroke,	
1 other cause	
49 were sent interview forms	53 were sent interview forms
2 deceased	1 deceased
1 did not respond to questions on form	3 did not respond to questions on form
46 responses to interviews received and processed	49 responses to interviews received and processed

Table III. *ADL function, satisfaction with care and quality of life in accordance with the VAS scale according to responses to questionnaire 3 months after discharge in study and control patients*

	Study patients $n = 46$	Control patients $n = 49$
ADL, Katz A or B (%)	100	98
Own accommodation without home help (%)	85	84
The patient is satisfied with (%)		
Therapy provided	94	86
Help received, aids	94	96
Amount of contact with doctors/nurses	94	96
Information provided, opportunity to ask questions	89	94
Interest shown by medical staff	96	96
Effort put in on the part of the hospital	80	86
Quality of life, mean value	60	61
Under 76 years of age/76 years or over	63/57	67/56

For the VAS scale, the following equivalences apply: 0 = the worst you can imagine; 100 = the best you can imagine.

interview form showed a high and unchanged ADL level in both groups 3 months after discharge. Although more effort was invested in patients in the study group, and they received more attention and information than the control group, patients in this group were more satisfied with their care in only one respect, namely the therapy they received. Otherwise, they were just as satisfied or less satisfied as those in the control group (Table III).

The patients in the study group sought medical help from the outpatients' department or their GP or were hospitalized to a lesser extent than the control patients, and for those hospitalized, the number of days of hospitalization was also less. In both study and control groups the proportion of patients hospitalized was greatest amongst the older patients (Table IV). The result in accordance with linear regression analyses with control for age did not show any statistically validated differences between the groups.

With regard to quality of life, in accordance with the VAS scale, there is no overall difference between the groups, but in both study and control groups the younger patients considered that they had a better quality of life than the older patients (Table IV).

In the study group, a total of 19 patients had results indicative of depression on one, two or three occasions: at discharge, at the one-month follow-up visit and the three-month follow-up (Fig. 1). At the 3-month follow-up, a total of 13 patients were depressed. (5 patients were below the group's median age of 77 years and 8 were 77 years of age or older).

In the control group, a total of 12 patients were depressed on one or two occasions: at discharge or at the 3-month follow-up (Fig. 1). At the 3-month follow-up 11 patients were depressed. (Six patients were below the group's median age of 75 years and 5 were older).

DISCUSSION

Three months after discharge, although there were no stastistically significant differences between the groups, there was a tendency to larger consumption of medical care in the control group. In both the study and the control groups older patients were hospitalized to a greater extent than younger ones. The high ADL level remained unchanged in both groups, and the study group's patients were equally as satisfied with the care they received as the controls. There was no difference in perceived quality of life between the groups, but generally the younger patients felt better than the older ones. Major variations occur and it is a well-known statistical problem that no far-reaching conclusions can be made from differences in such a small material. It was evident, however, that there was a large number of depressed patients in both groups. For the majority, the depression was undetected and untreated 3 months after onset of illness.

We had actually expected that the patients in the study group would think that they had derived more out of the medical care and thus be more satisfied than the patients in the control group, but this was not the case. Nor had perceived quality of life been influenced by our efforts. When it comes down to it, perhaps these findings are not so surprising. Being afflicted by a stroke brings to the fore issues connected with life and death, existing disablement, changed conditions for life together and close relationships, work and finances. The extra effort expended on the patients in the study group was obviously not of sufficient significance to affect their overall quality of life.

After 3 months many cases of depression were confirmed—approximately the same number in each group. Many of the patients in the study group had received treatment initiated after the examination on the occasion of their follow-up visit. Most of the cases of depression after 3 months had, however, not been detected on the occasion of the follow-up visit. We thus believe that the patients' symptoms manifested themselves later. In the control group the GP had noticed the situation in the case of

Table IV. *Different types of consumption of medical care in study and control patients during period between discharge from the hospital and questionnaire examination after 3 months*

	Study patients, $n = 46$			Control patients, $n = 49$		
	All	Under 76 yrs $n = 23$	76 yrs or over $n = 23$	All	Under 76 yrs $n = 22$	76 yrs or over $n = 27$
Been to emergency department (%)	17	17	17	29	27	30
Consulted GP (%)	85	83	87	90	100	81
Been hospitalized (%)	9	4	13	18	9	26

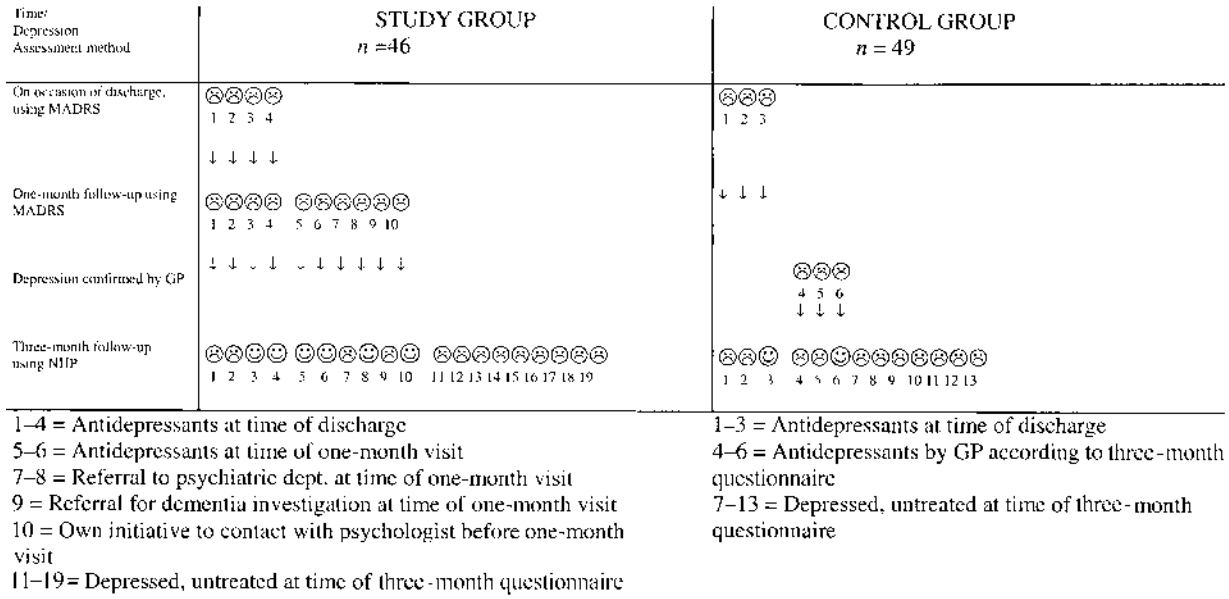

Fig. 1. Incidence of depression in study and control patients at time of discharge, one-month visit and according to responses to questionnaire 3 months after discharge. ☺J = not depressed; ☹L = depressed

some patients and had administered treatment, but in that group, too, there were still a number of patients who had not received any help after 3 months.

Two different instruments for identifying depression have been used. Ideally, MADRS should have been used throughout the study but this was too time-consuming. However, both tests are validated with high sensitivity and specificity. The result is consistent with other studies, showing that depression is common after stroke (10).

To sum up: our study shows that stroke patients discharged straight to their homes need follow-up, but hardly in the form of day-care visits involving such comprehensive testing as in this study. The five patients who were attended to as a result of reduced motor or cognitive function would perhaps have been detected and have received the same help through discussions with patients/relatives. There is, above all, a need for a follow-up aimed specifically at detecting depression. It seems too early to perform such screening after one month, and it must in any case be repeated two or three months after the onset of illness. The most important thing is that stroke patients should be given a follow-up, somewhere where there is a good level of knowledge about the incidence of depression in connection with strokes. Furthermore, an effective instrument of identification is needed, i.e. a reliable depression scale such as MADRS, with which to test the patients, since diagnosis is difficult.

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