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REHABILITATION OF HIP FRACTURE PATIENTS WITH PARKINSON'S DISEASE

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ABSTRACT. The incidence of hip fractures has increased over the past decades, and for patients with hip fractures, medical and social conditions have deteriorated during the same time. In this study the results of orthopaedic rehabilitation of patients with Parkinson's disease and a hip fracture are compared with those in all other hip fracture patients. A total of 74 patients with Parkinson's disease and hip fracture were compared with 1,361 patients without the disease. Prior to fracture, patients with Parkinson's disease were less likely to be living an independent life in their own homes. Postoperatively women with Parkinson's disease were hospitalized for a significantly longer period. Postoperative rehabilitation was significantly slower and less successful than among patients without the disease. Patients with Parkinson's disease comprise a subgroup of hip fracture patients who need more rehabilitation resources than can easily be provided at an ordinary orthopaedic ward. A team-work between an orthopaedic surgeon, a neurologist and a rehabilitation unit seems to be mandatory in order to achieve shorter hospitalization and earlier return to the pre-fracture environment.

Key words: hip fracture, Parkinson's disease, postoperative rehabilitation.

INTRODUCTION

The age-specific incidence of hip fractures has increased in the city of Malmö during the past 30 years (9). Similar observations have been reported from other West European cities (3, 7, 16, 18). In order to meet the increasing demands for hospital beds for the treatment of hip fractures there has been a tendency towards shortening the period of hospitalization after a hip fracture (8). It has, therefore, become more important to identify those patients for whom prolonged hospitalization is anticipated and for whom more intense rehabilitation is needed.

Compared with age- and sex-matched controls, concomitant diseases such as Parkinson's disease are more common in hip fracture patients (6, 10). Parkinson's disease as a pre-hip fracture condition has increased during the past decades in the city of Malmö (15). Since Parkinson's disease reduces the mobility of the patient it can be anticipated that the post-fracture care of affected patients may be adversely affected. The purpose of this study was to analyse and compare the rehabilitation of hip fracture patients with and without Parkinson's disease.

MATERIAL AND METHOD

From 1982 to 1985 a total of 1,429 patients with hip fracture were studied prospectively. Seventy-four (5.2%) of the patients had the diagnosis *M. Parkinson* on admission (Table I). The diagnosis had been made by other physicians before the fracture.

All other patients with a hip fracture were used as controls and were compared with the patients with Parkinson's disease.

Social and various background factors were registered, before and after the fracture, as well as the fate of the patient and the progress of rehabilitation after the fracture (Table II).

Postoperatively, all patients were treated at the same orthopaedic department and according to the same routines. The daily care was provided by specialists in orthopaedic surgery, with consultations by neurologists or geriatricians only on demand.

Since no significant differences in the prevalence of Parkinson's disease have been found between trochanteric and cervical fractures in Malmö (10), the results were not divided according to fracture type, in order to avoid further distribution of the limited number of patients with Parkinson's disease into smaller subgroups. All patients were followed up for at least 1 year, with cervical hip fracture followed by clinical examinations and radiography for 2 years.

The percentage of uncertain or missing answers was less than 2%, except for sight and mental status, 6% each. Most of the uncertain variables were in patients admitted from nursing homes and geriatric hospitals.

Statistics

Statistical analysis was done using the odds ratio of probability of the variables for patients with Parkinson's disease

Table I. *The distribution of Mb Parkinson according to gender, together with mean ages of each subgroup*

	Hip fracture men	Mean age (SD)	Hip fracture women	Mean age (SD)
No Mb Parkinson	346	74 (13)	1009	79 (10)
Mb Parkinson	23 (6.2%)	75 (7) years	51 (4.8%)	78 (6)

compared with hip fracture patients without the disease. Exact 95% confidence intervals were calculated. For comparison of the period of hospitalization for the patients, Student's *t*-test was used.

RESULTS

Pre-fracture status

Prior to fracture the patients with Parkinson's disease were significantly more dependent on outside help. Home aid for less than 4 hours/week was about four times more usual for both genders with the disease than for those without. Living in their own home was three times less common, and four to six times fewer Parkinson's patients were able to do their own shopping (Table II).

Post-operative data

There was no significant difference in the proportion of displaced—Garden (4) types 3 and 4—cervical hip fractures between the groups, nor in the failure rate. The number of secondary total hip replacements did not differ significantly between the groups.

Women with Parkinson's disease stayed on average 41.1 days (sd = 33.6) in hospital compared with 27.3 days (sd = 22) for women without the disease ($p < 0.001$). Men with the disease were also hospitalized longer (30.8 days) than those without (23.5 days), but the difference was not significant.

Rehabilitation

The postoperative rehabilitation was also more troublesome for both women and men with Parkinson's disease, with significantly fewer patients being able to walk with two crutches after 2 weeks, and fewer women were discharged directly to their own homes (Table II).

Table II. *Pre-fracture function, rehabilitation and final results of patients with Parkinson's disease compared with all other patients with hip fractures*

Odds ratio of—patients with Mb Parkinson/patients without Mb Parkinson—and 95% confidence intervals (CI).

	Women		Men	
	Odds ratio	CI (95%)	Odds ratio	CI (95%)
Pre-fracture status				
Living in own home before fracture	0.36	(0.2–0.61)	0.32	(0.13–0.68)
Living alone	0.33	(0.16–0.61)	0.74	(0.19–1.97)
Home aid <4 hours/week	0.24	(0.1–0.48)	0.27	(0.04–0.64)
Own shopping	0.22	(0.07–0.53)	0.06	(0.003–0.51)
No psychiatric disorders	0.37	(0.2–0.62)	1.03	(0.34–2.2)
Post-operative data				
Displaced fracture (Garden 3 + 4)	0.53	(0.23–1.05)	0.46	(0.15–1.09)
Failure of healing	1.05	(0.5–2.0)	1.26	(0.47–2.07)
No secondary operation	1.55	(0.8–2.67)	1.7	(0.31–5)
Secondary total hip replacement	0.43	(0.17–0.88)	0.69	(0.12–2.36)
Post-operative rehabilitation				
Discharged to own home	0.1	(0.04–0.23)	0.24	(0.08–0.64)
Walking with 2 crutches after 2 weeks	0.25	(0.06–0.7)	0.17	(0.004–0.46)
Alive after 1 year	0.66	(0.36–1.11)	0.69	(0.28–1.42)
Return to pre-fracture environment <1 year	0.32	(0.13–0.68)	0.24	(0.06–0.64)
Living at home 1 year after fracture	0.26	(0.12–0.48)	0.07	(0.007–0.22)
Outdoor walking, unaided or with one cane 1 year after fracture	0.25	(0.06–0.7)	0.49	(0.16–1.25)
Outdoor walking, unaided or with one cane 2 years after fracture	0.43	(0.1–1.25)	0.12	(0.03–0.59)
Able to stand on one leg, 1 year after the fracture	0.16	(0.03–0.55)	0.19	(0.07–0.48)
Able to stand on one leg, 2 years after the fracture	0.11	(0.01–0.54)	0.15	(0.07–0.59)

No significant difference was found in mortality between patients with Parkinson's disease and the controls. Three times fewer women and four times fewer men with Parkinson's disease had returned to their pre-fracture environment within the first year and significantly fewer were living in their own home after one year. Good walking ability, hallmarked by the absence of walking aids or, at most, the use of one stick for outdoor use, was observed more than two times more often among the control group than among patients with Parkinson's disease. After 2 years, this difference had decreased for women without the disease but increased for men. The ability to stand on one leg was significantly better for both genders in the control group as compared with Parkinson's disease patients, both after 1 and 2 years (Table II).

DISCUSSION

In this study Parkinson's disease was found to delay the rehabilitation after a hip fracture and reduce the probability of returning to the pre-fracture habitat. This delay in rehabilitation was observed for both the short and long term. Since all patients were rehabilitated according to the same routines it is apparent that hip fracture patients with Parkinson's disease need more resources than can be provided at an ordinary orthopaedic ward.

Since joint orthopaedic–geriatric units have proved their usefulness for the average hip fracture patient (1, 5, 11, 13) individuals with more complex disabilities—such as Parkinson's patients with hip fractures—will probably benefit even more.

The use of Levodopa is considered significantly beneficial in the treatment of patients with Parkinson's disease and orthopaedic problems. However, side effects and dosage control have been found to be a problem, and therefore the drug should be administered only by physicians thoroughly familiar with its clinical effects (14). It is possible that insufficient knowledge about dosage control by the attending orthopaedic surgeons might partly explain the slow rehabilitation noted in the present study.

The mortality rate for Parkinson's disease is enhanced compared with that of the general population (12). This is the case also for unselected patients with hip fracture during the first year after the event (17). Therefore, an increased mortality rate might be expected in the Parkinsonian patients after hip fracture (2), but this could not be confirmed by the present observations.

In summary, in this study comprising patients with Parkinson's disease and a hip fracture treated with internal fixation, rehabilitation was found to be slower than for the average hip fracture patient. Since such patients with Parkinson's disease suffer from complex musculo-skeletal disorders, multidisciplinary treatment is required in order to facilitate rehabilitation.

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