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Hip fracture in stroke patients

Epidemiology and rehabilitation

With the purpose of identifying specific features in aged hemiplegic patients, 818 cases referred to a geriatric-rehabilitation hospital after hip fracture were studied. In 66 cases a cerebro-vascular accident had preceded the fracture, which was ipsilateral in 52 cases. No differences were found in incidence of concurrent disease, hospitalization time, mortality and functional recovery between hip fracture patients with and without a history of stroke, except that an interval of less than a week between stroke and fracture was associated with poor functional recovery. We conclude that rehabilitation of the stroke patient with hip fracture is worthwhile.

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Hip fracture is a common late complication of a stroke (Alffram 1964, Moskowitz 1969). There are at least two possible explanations for this relationship: perceptual and balance disorders are common sequelae after stroke and the paretic or hemiplegic lower limb is more prone to develop disuse osteoporosis (Hodkinson & Brain 1976).

The purpose of this retrospective study was to identify specific features of hip fracture in aged hemiplegic patients.

Patients and methods

All patients referred to Flieman Geriatric-Rehabilitation Hospital after hip fracture over the 5-year-period 1978–1982 were divided into two groups: *proband* patients with and *control* patients without a history of stroke prior to the fracture. The following information was noted: age and sex, type and side of fracture, side of the cerebro-vascular accident (CVA), function before and after the fracture, duration of hospitalization, concurrent disease, and mortality. Function was assessed as *recovery* to pre-fracture level, *mild impairment* (walking with the help of a quad cane or walking frame), and *severe impairment* (confined to wheelchair or to bed).

Results

The total material was 818 patients with hip fracture, 66 of whom had a history and neurologic signs of CVA, 38 of these left-sided and 28 right sided; 39 had suffered a trochanteric and 27 a cervical fracture. In 52 cases the hip fracture was ipsilateral, i.e. on the same side as the CVA ($p < 0.0001$). Of 752 hip fractures in the control group, 414 were trochanteric and 338 cervical.

The majority of both probands and control patients were women between 71 and 80 years. Congestive heart failure, organic brain syndrome and diabetes mellitus occurred in one third of both proband and control patients. Of the 752 control patients, 526 were functionally independent before the fracture and 226 had mild impairment. After the fracture 117 recovered their pre-fracture level, 400 had mild functional impairment, and 193 severe impairment.

Thirty-one of the probands were functionally independent before the hip fracture, in 30 probands the impairment was mild, and only five probands had severe impairment before the fracture. Twenty-three still had mild impairment and 16 severe functional impairment (Table 1).

In the majority of cases, the interval between CVA and fracture was longer than 6 months. In 23 probands with persisting severe functional impairment, the interval between stroke and hip fracture was shorter than 7 days in 11 cases, none of whom returned to the prefracture functional level.

The mean hospitalization time was 57 days in control patients and 68 days in probands; the patients were discharged when further re-

Table 1. Rehabilitation after hip fracture in 66 stroke patients

Before fracture		After rehabilitation			Dead
		A	B	C	
A	31	12	14	4	1
B	30	12	9	7	2
C	5	–	–	5	–
Total	66	24	23	16	3

A – functionally independent; B – mild impairment; C – severe impairment.

habilitation would not improve their status. 3/66 probands and 42/752 control patients died in hospital.

Discussion

The incidence of previous stroke in hip fracture patients ranges from 4 to 15 per cent (Peszczynsky 1957, Campbell 1976, Mulley & Espley 1979); in our study the incidence was 8 per cent. According to Brocklehurst et al. (1978), hip fracture more often occurs in stroke patients under the age of 75, which agrees with our observations. Mulley & Espley (1979) found a male-to-female ratio of 1:2 among 57 patients with hip fracture and previous hemiplegia, which did not differ from that of aged patients with hip fracture alone (Beals 1972, Jensen 1980). We observed a four-fold female predominance, a ratio agreeing with findings of Alffram (1964) and Hielema (1979). In accordance with previous studies (Peszczynsky 1957, Mulley & Espley 1979), we found ipsilateral hip fracture to be prevalent.

The side of stroke did not seem to influence the tendency to hip fracture. We were surprised to note the minimal differences between the three functional levels among our two groups of hip fracture patients. It seems that function at the end of hospitalization is related to the status before the fracture.

The interval between the stroke and the hip fracture seemed to be prognostic as regards functional recovery; intervals less than 7 days between the two events were associated with poor prognosis. This short interval is clearly not sufficient for the stroke patient to make functional recovery after hip fracture. However, in general, functional recovery after hip fracture was as good in patients with stroke as in those without, and we conclude that it is worth rehabilitating stroke patients after they have suffered a hip fracture.

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