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Hip fracture and accident disposition

The accident disposition as reflected by previous trauma episodes was studied in 242 consecutive hip fracture patients. Trauma episodes had been almost twice as common in hip fracture patients as in a control group. Also, previous fractures were more common.

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It has been suggested (Lawton et al. 1983) that hip fracture may often be the cause rather than the effect of accidents caused by falling. Cook et al. (1982), interviewing hip fracture patients and controls found that fracture patients could recall other accidental falls in their past.

In the city of Malmö, the population may be considered to be captive with respect to health care; roentgen examinations related to accidents may be traced for individual residents. This method of tracing trauma events through documentation is a different and perhaps more reliable measure of accident disposition than the memory of elderly patients.

Patients and methods

This investigation was conducted as a retrospective case-control study involving 242 consecutive recent hip fracture patients with trochanteric or cervical fractures of the upper end of the femur. One hundred and fifty-eight (age 78±10) were women and 84 (age 73±15) men. The controls were randomly sampled from the records of the population at risk, residents of the city of Malmö, by selecting the next two individuals of the same age and sex who appeared in the city files. Thirty-three of the controls had also had hip fracture, but they were not excluded.

In the record room of the Department of Diagnostic Radiology of our hospital, the referrals and reports of city residents are kept in separate folders for each individual. It was therefore possible for the purpose of the present study to investigate all roentgen examinations that had been carried out during the last 32 years and also the outcome of the examination. Whenever there was any doubt about the fracture classification, the films were reviewed. Because of the structure of the health care delivery system, virtually all emergency radiography is performed in the hospital – such patients are rarely accepted in other roentgen services (in private clinics and in hospitals for geriatrics and psychiatry).

Results

Fracture patients and controls had been subjected to a similar number of roentgen examinations at some time during the preceding 30 years (Table 1).

In *women,* 61 per cent had had one or more roentgen examinations because of trauma episodes, as compared with 47 per cent in the controls (Table 1). Also, the number of trauma events was greater in those subjects with previous trauma who belonged to the hip fracture group than in the controls (Figure 1). More hip fracture patients than controls had had fractures in the past. For most types of trauma, more subjects among the hip fracture patients had events in their past – one exception being

Table 1. Previous radiographic examinations in hip fracture and control patients.

	n	Total	Radiographic examinations: Because of trauma	Radiographic examinations: With fractures
Women				
Hip fracture	158	80%	61% **	48% **
Controls	316	83%	47%	34%
Men				
Hip fracture	84	82%	57% *	43% ***
Controls	168	82%	43%	18%

* = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

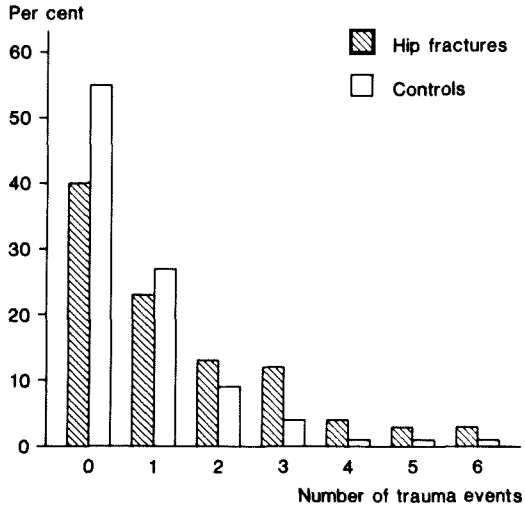

Figure 1. Distribution of trauma events. Since there was no sex difference, men and women have been pooled. Those hip patients with additional trauma also had more trauma events than the controls ($p < 0.05$).

the distal end of the forearm (Table 2). In *men*, the number did not permit this analysis.

In hip fracture patients the trauma events had occurred somewhat more recently than in the controls. The medium time elapsing from trauma event to follow-up was 6 and 8.5 years for women and men, respectively, as compared with 9 and 10 years for the controls.

Discussion

Our observations suggest that hip fracture patients are accident prone, thereby supporting the findings in the interview study by Cook et al. (1982). The coincidence between hip fracture and other fractures has been demonstrated by Alffram (1964) and Horak & Nilsson (1975). It has, in general, been understood that a difference in the quality of the skeleton is responsible for this correlation. Quantitative studies of bone mass of the upper end of the femur have demonstrated subnormal values in women with hip fracture (Vose & Lockwood 1965, Fredensborg & Nilsson 1977), whereas Bohr & Schaadt (1983) and Johnell & Nilsson (1984) were unable to demonstrate any deviation of the bone mineral content in the neck of femur in female hip fracture patients as compared with age-matched controls. Presumably many, maybe most, women of this age have lost enough bone to have a fracture. There is also evidence that hip fracture patients more often than other patients may have episodes of dizziness which could predispose to accidents such as falling to the ground when standing or walking (Abdon & Nilsson 1980, Ceder 1980, Cook et al. 1982). Men with hip fracture have a reduced bone mineral content (Johnell & Nilsson 1984), and there is also a relationship between hip fracture and alcoholism (Nilsson 1970).

In conclusion, not only the quality of the skeleton but also the endogenous variables which cause accidental falls are probably responsible for hip fractures in the elderly.

Acknowledgements

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Table 2. Radiographic examinations for trauma in female hip fracture patients and controls. The numbers shown refer to locations and are expressed as percentage of the cohorts of Table 1.

	Distal forearm	Hip	Ankle	Spine	Ribs	Knee	Skull	Shoulder	Other
Hip fracture	18	18 *	12 **	10 **	10 **	6	10 **	10	23 **
Controls	19	12	4	3	4	4	4	7	12

* = $p < 0.05$; ** = $p < 0.01$.

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