

Mental state and other prognostic factors in femoral fractures of the elderly

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SUMMARY. Fifty elderly patients with fractured femurs were followed up for six months. A hospital stay of less than 28 days and a good pre-fracture mental state were such important favourable prognostic factors that their absence made the outlook poor and carried clear implications concerning management.

Introduction

AS life expectancy increases, fractures of the femoral neck become more common. Two per cent of females and one per cent of males of 85 years or older are affected each year (Knowelden *et al.*, 1964). At the same time mental frailty also increases. Senile brain syndrome occurs in 10 per cent of the over 75s and is severe in half the patients who have it, although fewer than a fifth are having institutional care. Another 30 per cent are subject to affective disorders or neuroses (Kay *et al.*, 1964). These factors make management not only an orthopaedic problem.

Bø (1966) found that, following an average observation period of 5·8 years after the fracture, 50 per cent had excellent results, 25 per cent fair, and 25 per cent poor. These figures are not greatly different from other series (Linton, 1944; Odén, 1947).

In a long-term follow up of 147 patients (Katz *et al.*,

1967) three years after the fracture, the cumulative mortality was 37 per cent, but this figure includes two thirds of those who had marked physical disabilities before the fracture. In another review (Naden and Denbesten, 1969) one fourth had died after one year and of the survivors one fourth never walked again. The importance of physical disability before the fracture was shown also by Gordon (1971) who found that of those immobilized before their fracture only 38 per cent survived the year.

Aim

Although the literature is rich with orthopaedic series, we wished to investigate the prognosis of elderly patients (aged over 65) with femoral fractures related to age, duration of admission, and the pre-fracture mental state.

Method

Fifty consecutive admissions of such patients were admitted under one orthopaedic firm and were followed up by one observer who saw them after admission, at six weeks, and again at six months. The observer was a general practitioner (B.R.B.) who concentrated on the quality of independence as well as on the patient's pre-fracture mental state.

Forty-one of the patients were female and nine were male. Twenty-eight of the fractures were subcapital and 22 intertrochanteric. Analysis of subcapital and intertrochanteric fractures revealed no significant difference in this small series.

When both types of fracture were analysed together, the duration of hospital stay was shown to be an im-

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Table 1. Duration of admission and outcome at six months of the 40 patients alive six weeks after fracture.

| Recovery at six months | Duration of hospital stay | | |
|------------------------|---------------------------|-----------------|---------------------|
| | 28 days or less | 29 days or more | Total all durations |
| Good | 12 | 3 | 15 |
| Fair | 5 | 4 | 9 |
| Poor | 2 | 2 | 4 |
| Dead | 3 | 9 | 12 |
| Total | 22 | 18 | 40 |

Table 2. Previous mental state by outcome at six weeks.

| Previous mental state | | Recovery at six weeks | | | |
|-----------------------|----|-----------------------|------|------|------|
| | | Good | Fair | Poor | Dead |
| Good | 26 | 5 | 17 | 3 | 1 |
| Fair | 13 | 1 | 5 | 2 | 5 |
| Poor | 11 | 1 | 5 | 1 | 4 |
| Total | 50 | 7 | 27 | 6 | 10 |

portant factor in the eventual outcome (Table 1) although the survey by Gordon (1971) showed that it required a year to establish the definitive outcome.

Recovery was graded as excellent, good, fair, or poor. A good recovery was defined as total independence within the house. An excellent recovery included also ability to go out shopping alone and to use public transport. A fair recovery meant reasonable independence inside the house but needing help with such activities as going up and down stairs, cooking, cleaning, or going to the lavatory. A poor recovery was dependent on assistance in some daily activities and inability to maintain even with difficulty a fully independent existence.

The prognostic significance of the pre-fracture mental state was even more marked. The mental state was assessed within a few days of admission, both by history and interview (Godber, 1975). A good mental state meant no trace of confusion or dementia; a fair mental state meant some slight memory or other impairment such as occasional confusion; and a poor mental state signified dementia needing supervision and help from others for daily life.

Results

Of the 27 patients who stayed in hospital for 28 days or less, the outcome after six months was good in 12 cases,

Table 3. Outcome at six months by previous mental state.

| Previous mental state | Outcome at six months | | | Total |
|-----------------------|-----------------------|--------------|------|-------|
| | Good | Fair or poor | Dead | |
| Good | 11 | 10 | 5 | 26 |
| Fair or poor | 4 | 3 | 17 | 24 |
| Total | 15 | 13 | 22 | 50 |

$\chi^2 = 13.52$ (with Yates' correction = 10.69; 2 d.f.: $p < 0.01$).

Table 4. The 22 deaths by weeks after fracture.

| <1 week | 1-2 | 2-3 | 3-4 | 4-5 | 6-8 | 9-12 | 13 weeks |
|---------|-----|-----|-----|-----|-----|------|----------|
| 0 | 2 | 2 | 1 | 5 | 5 | 5 | 2 |

Table 5. Age by outcome at six months.

| Age | Number | Recovery at six months | | | |
|----------|--------|------------------------|------|------|------|
| | | Good | Fair | Poor | Dead |
| 65- | 4 | 1 | 2 | 1 | - |
| 70- | 22 | 8 | 3 | 2 | 9 |
| 80- | 18 | 6 | 3 | 1 | 8 |
| 90-94 | 6 | - | 1 | - | 5 |
| All ages | 50 | 15 | 9 | 4 | 22 |

fair in five, poor in two, and eight deaths. Of those patients who stayed over a month in hospital only three had good results and 14 died.

The review at six weeks (Table 2) was shown to be premature for accurate assessment. Seven had made a good recovery by then and only 10 had died. After six months (Table 3) good recoveries totalled 15 and deaths totalled 22, both about double the six-week figures. The 26 patients with good previous mental state differed significantly in their six-month recovery from the remaining 24 patients (χ^2 , with Yates' correction = 10.7, 2 df: $p < 0.01$). Those with good previous mental state included 11 with good recovery at six months and only five deaths; in those with a 'fair' or 'poor' previous mental state, only four had good recovery and 17 died.

Five patients had both a poor pre-fracture mental state and a hospital stay longer than 28 days. All these died.

Death did not necessarily come rapidly for there were more deaths in the second month in hospital than in the first (Table 4) and six of the 22 deaths occurred after

Table 6. Social circumstances and recovery of the 28 survivors at six months.

| Social circumstances | Recovery | | |
|--------------------------|-----------|----------|----------|
| | Good | Fair | Poor |
| Living alone | 7 | 4 | - |
| With spouse | - | 2 | - |
| With spouse and daughter | 1 | - | - |
| With daughter | 1 | - | - |
| With sister | - | 2 | - |
| With employer on farm | 1 | - | - |
| In same hospital | - | - | 1 |
| In other hospital | 3 | - | 2 |
| In social care home | 2 | 1 | - |
| Not known | - | - | 1 |
| Total | 15 | 9 | 4 |

Table 7. Dependence and independence.

| | Before fracture | At six weeks | At six months |
|-------------|-----------------|--------------|---------------|
| Dependent | 18 | 36 | 21 |
| Independent | 32 | 3 | 6 |
| Dead | - | 10 | 22 |
| Not known | - | 1 | 1 |

discharge home. Although in such aged patients death is increasingly likely, one sees little difference between those in their seventies or eighties although both these age groups did better than the 90 to 94 age group (Table 5).

In reviewing the social circumstances of these patients at six months (Table 6) one sees hints of the loneliness of old age. Eleven of the 24 who had made a good or fair recovery were living alone, while only two lived with a spouse, one with a daughter, and one with both. A third of all the survivors were living in an institution. The difficulty in discharging elderly patients from acute orthopaedic beds must in consequence be a common problem: but in this series only one patient was still in the same hospital after six months and eight had been transferred to other institutions.

The more disquieting feature of this small survey is the major loss of independence despite skilled orthopaedic surgery. At the start, before the fracture, 32 were fully independent. After six months only six were fully independent (Table 7).

Discussion

In a condition with a 44 per cent mortality at six months (Table 7), what lessons can be drawn and what

recommendations made?

First, priority for rehabilitation should be given to those with a good pre-fracture mental state. Geriatric aid should be sought early, especially for those in this category whose speed of recovery is slow without good physical cause. Because rehabilitation resources are limited, demented patients should be accorded a lower priority, but any recent important exacerbation of their confusion or dementia indicates a need for urgent and careful review.

Since only about a quarter of the good recoveries achieved total independence, a limited domiciliary physiotherapy service after discharge from hospital to encourage full activity outside as well as inside the house merits evaluation.

From this survey neither age nor social circumstances seemed to be factors influencing recovery as much as the patient's mental state and high quality rehabilitation facilities for those most able to benefit from them. When admitting such patients, therefore, it is just as important for the practitioner to describe the patient's independence and mental state as to give details of drugs currently being taken.

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Acknowledgements

Dr B. R. Baker was supported by the generosity of the Nuffield Provincial Hospitals Trust. Professor J. Knowelden and Dr R. A. Dixon kindly advised in the design of the project and of this report. Further valuable assistance was given by Mrs M. Nicholson and Mrs S. M. Harris.

The consultant's responsibilities

" . . . He has a responsibility towards the community he serves via the general practitioner, who he must ensure is kept fully informed. While the patient is in hospital the clinical responsibility lies with the consultant. The general overall medical care of outpatients remains the ongoing responsibility of the general practitioner, the consultant acting in an advisory capacity or providing specialized treatment."

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