atrial fibrillation weeks before the fall which caused the fracture. She had a history of asthma with inhaled β-adrenergic and corticosteroid medication for about 10 years. She also took calcium tablets. She had been active and independent walking regularly and driving to the shops.

The subject is thin (weight 48 kg, height 162 cm, body mass index 18.3) with no cognitive impairment. Left Ward's triangle bone mineral density (measured with a Hologic DEXA scanner) was 0.262 g/cm² 3 months after fracture. This represents a t score of -4.04 (peak bone mineral density matched). The protectors used were Safeshield hip protectors manufactured by Sahvatex A/S (Denmark). She had been supplied with four pairs on entry to our study. The hip protectors (which include the underwear with the hip protector shields permanently sewn in) had been washed in a domestic washing machine and air-dried about 10 times. There was no fabric wear evident and the shields appeared undamaged.

The subject fell on her buttocks and, although the primary impact was transmitted to the sacrum and pelvis, there was sufficient additional energy transmission to fracture the proximal femur. Low proximal femoral bone mineral density was a contributing factor.

Two studies have reported odds ratios of 21.7 and 32.5 respectively for risk of proximal femoral fracture for a fall involving impact on or near the greater trochanter of the femur compared with subjects who fell without fracture [2, 3]. This suggests that the ideal hip protector should prevent most but not all proximal femoral fractures due to falls. It is therefore surprising that this is the first report of a proximal femoral fracture while wearing correctly applied hip protectors.

In our studies about 280 falls have been recorded in women wearing hip protectors at the time of fall. This implies that the risk of proximal femoral fracture from a fall while wearing properly applied hip protectors is about 0.35%, although this estimate may be imprecise. However, it is clear that hip protectors will not prevent all proximal femoral fractures, even in subjects who use them properly.

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Why do so few older people with aortic stenosis have valve replacement therapy?

SIR—This recent report [1] prompted me to review my own series of 60 patients (49 female), compiled over 14 years, with aortic valve gradients over 50 mmHg on echocardiography. Only three were under 75, and 36 were over 80. Dyspnoea, angina and syncope featured in 54, 28 and 15 patients, respectively, with radiological validation of left ventricular failure in 42. Many patients had various permutations of these stigmata. I referred 26 for aortic valve replacement.

One died whilst waiting, and one is now on the waiting list. Two declined surgery. Thirteen were turned down by the cardiologist acting as gatekeeper for the cardiothoracic team. Five of these seemed unjustifiable to me. Five other rejections were justifiable and three decisions were debatable.

Of the 11 patients who underwent aortic valve replacement, four had a good outcome, including an 82-year-old woman who was blind but otherwise fit, an 83-year-old woman who had fully recovered from a stroke, a 76-year-old man with a left ventricular ejection fraction of 40% and mitral regurgitation, and a 78-year-old woman, presenting with left ventricular failure and angina, who now enjoys complete freedom from heart failure without any diuretics, 6 years after her aortic valve replacement.

One of these successes involved hard bargaining. Another refused to be deterred by predictions of procedure-related morbidity and mortality: the cardiothoracic team subsequently acknowledged that the outcome exceeded their expectations. One other patient went into permanent atrial fibrillation post-operatively, and two others died soon after aortic valve replacement.

Thirty-four patients were not referred, including 12 with significant co-morbidity. This leaves 18 patients whose notes did not record any indication of why they were not referred for aortic valve replacement.

These cases reflect the complexity of clinical decision-making in aortic stenosis, in which there is procedure-related morbidity and mortality. We need to know how to identify good patients for surgery [2], how frail patients fare after this operation, and what proportion of unselected elderly patients would fall into this category.

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Letters to the Editor

Evaluation of an integrated care pathway for stroke unit rehabilitation

SIR—The integrated care pathway (ICP) method is the implementation of an organized, goal-defined and time-managed plan for stroke rehabilitation which has the potential of facilitating timely interdisciplinary coordination, improving discharge planning and reducing length of hospital stay.

A ICP for stroke rehabilitation was developed by the interdisciplinary team after we carried out an extensive review of the literature on stroke care pathways using the Medline, CINAHL and Health Services databases [1, 2]. We undertook pilot evaluation of the ICP in 86 patients on a stroke rehabilitation unit. We compared the outcome and length of hospital stay in these patients with that expected on the basis of the ICP and historical data collected in a similar patient group in the period before implementation of the ICP. The ICP was co-ordinated by nurses and reviewed at weekly intervals by the whole interdisciplinary team. Variations from the ICP and their reasons were recorded and discussed by members of the team who were able to modify goals or time frames, if appropriate. We performed a user survey to assess the acceptability of the ICP to the members of the interdisciplinary team.

We achieved a minimum standard of 80% of ‘benchmark’ events in 79 patients (92%). The goals of rehabilitation, interdisciplinary interaction and liaison with relatives and community agencies had been recorded in 82 patients (95%) and had been undertaken within the time frames set by the ICP. There was evidence in the ICP document that appropriate medical interventions had taken place in all but 10 (12%) of the patients. A review of the medical records of those 10 patients showed that the necessary investigations and management had occurred, but had not been documented in the ICP record. Nursing and therapy events, variations and plans had been documented in all but four patients. The median time for the whole patient group to achieve individual events was comparable to the time frames set out in the ICP.

Of the 86 patients managed using the ICP, 72 (84%) were discharged home. Their median Barthel index at the time of discharge was 16 (range 8–20) and the median length of stay on the rehabilitation unit was 32 days (range 7–56). Management using ICP did not result in any important differences from the destination of discharge, functional outcome or length of hospital stay expected in the ICP or compared with previous data.

Twelve out of 14 users (86%) were confident in implementing the ICP. Although all users believed that their workload had increased, estimates varied from <15 min to >1 h per week. Some expressed concerns that the time frames in the pathway imposed restrictions on clinical practice.

This study shows that the ICP method is feasible and can be introduced in the stroke rehabilitation setting. We did not find any significant differences in outcomes between the groups analysed before and after the ICP was introduced, although there was a trend towards shorter median length of stay and improved median Barthel index on discharge. The study was intended to assess the acceptability of this style of care and was not powered to detect significant differences in other endpoints. The non-randomized design of the study may also have compromised the possibility of detecting a statistically significant difference.

Uptake of events suggested by the ICP was generally very good, although we needed to modify the pathway on occasions because of variances in the progress of the patient compared with that expected. Users found the ICP acceptable, although more time-consuming than previous standard care.

There is clear theoretical potential for ICPs to improve stroke care, bearing in mind the complex nature of stroke rehabilitation. The main area for potential benefit may be in those patients who because of local constraints cannot be managed on a stroke unit. We have shown that this style of care is feasible, but a formal randomized controlled trial is necessary to determine whether it offers any advantages over standard care.

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