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LESSONS FROM A SYMPOSIUM ON MANAGEMENT OF FALLS IN ELDERLY PEOPLE HELD IN THE COLLEGE ON 3 MAY 1995*

Susan E. Pound, Department of General Medicine, Royal Infirmary of Edinburgh

Falls are common in the elderly and a major cause of morbidity and mortality, often resulting in the loss of independence. Falls are rarely the result of a single factor and a broad approach is required in both diagnosis and management. This symposium set out to address the causes and consequences of falls, the contribution of poor balance and syncope, the role of rehabilitation, and strategies for prevention. The multi-disciplinary nature of the problem was reflected in the audience which included nurses, doctors, occupational therapists, physiotherapists, social workers and a hospital manager.

Cardiovascular causes of falls

In patients who present with dizziness associated with falls, a feeling of faintness is more likely to have a cardiovascular cause (26%), vertigo or spinning to have an ENT cause (16%), and unsteadiness to have a central cause (36%). However, overlapping diagnoses are common and 22% of patients have more than one cause contributing to their fall. The most common cardiovascular diagnoses are carotid sinus syndrome, orthostatic hypotension and arrhythmia.

Syncope is defined as a brief loss of consciousness secondary to reduced cerebral perfusion and the annual incidence in the elderly is 6% with a prevalence of 23% over 10 years. In carotid sinus hypersensitivity, carotid sinus massage (CSM) for 5 seconds leads to an exaggerated baroreflex response. This may show as cardioinhibition with more than 3 seconds of asystole; vasodepression, with a fall in blood pressure of more than 50 mmHg systolic, or a mixed response where the reduction in blood pressure is still seen even if atropine is given to abolish the slowing in heart rate. Ten per cent of patients with carotid sinus hypersensitivity have to be tilted upright in order to elicit a positive response. CSM should not be performed within 6 weeks of a cerebrovascular event, within 3 weeks of cardiac event, or if the patient is digitoxic. Carotid sinus syndrome syncope is precipitated by increased vagal stimulation such as by head movement, prolonged standing, micturition and defaecation, occurs almost exclusively in the elderly, and is extremely rare under the age of 50 years. One third of patients with carotid sinus syndrome present with falls but deny syncope, due to retrograde amnesia for the event. The characteristic of such falls is that they are recurrent and unexplained. Patients with cardioinhibitory carotid sinus syndrome do well with insertion of a pacemaker, but those with the vasodepressor response are difficult to treat. Orthostatic hypotension, another cardiovascular cause of syncope, is not consistently reproducible and therefore repeated measurements are needed, preferably in the mornings. It is more readily detected in patients with other abnormal autonomic function tests.

In summary, patients with an underlying cardiovascular cause are likely to

*A list of speakers and the titles of their papers presented at this symposium is recorded in *Proceedings*, Vol. 25, p 537.

present with loss of consciousness, lightheadedness and pallor, to have symptoms when lying, sitting or particularly with prolonged standing and to have other cardiovascular diagnoses. If falls are unexplained or recurrent, syncope is a possible cause.

Physiotherapy intervention

Physiotherapists aim to solve mobility problems by improving muscle strength, joint flexibility, endurance, postural and functional skills, and by reducing pain. The aims in rehabilitating elderly people who fall are (i) to improve the ability to withstand threats to balance, (ii) to improve the safety of the surroundings, (iii) to restore confidence (of both the patient and carer) in the ability to move around safely and (iv) to prevent the consequences of a long lie on the floor. To improve the ability to withstand threats to balance (such as standing up, sitting down, transferring and walking) requires identification of impairments which underlie poor postural control and which are amenable to intervention. These include joint stiffness, muscle weakness and pain. Stability is increased by balance training, muscle strengthening, and flexibility work with provision of mobility aids and appliances only if really necessary. Environmental hazards can be identified and safety increased by stimulating awareness of such hazards and how to avoid them. Unfortunately, this aspect of rehabilitation has had somewhat modest returns. Lack of confidence may lead to self-imposed restriction of activities and can be restored by ensuring success at increasingly severe challenges to balance. The consequences of a long lie can be prevented by teaching how to get up from the floor, how to summon help or to move about and how to keep warm whilst on the floor. Only two thirds of people who fall actually want to be taught how to get up from the floor, often through fear of failure or feeling unsafe on the floor. The 'backward chaining' method of teaching breaks up a task into several small steps, taking the end goal as a starting point. The first step is the one just preceding the goal end, and each new step is slowly worked back from this. The therapist should stop when it is clear the person will not succeed so that failure is avoided. Such teaching should be practised frequently during the admission, rather than in a quick lesson prior to discharge, so that it is more likely to be remembered if the need arises.

Role of exercise in falls

Exercise means different things to different people; while physical activity is any purposeful movement of the body resulting in the expenditure of energy, exercise should involve a conscious effort to improve or maintain fitness. Exercise has the potential to improve balance, increase muscle strength and strengthen bone.

Balance can be assessed by measuring sway, the length of time standing on one leg, the ability to walk along a balance beam, and functional reach. Studies have shown that balance can be improved by specific exercises but not by a general exercise programme. There is a linear reduction in muscle strength with age, which usually becomes apparent in the fifth decade. To rise from a chair, a young person requires 50–70% of their maximum voluntary muscle contraction, but an 80-year old requires 85–100% due to the reduced muscle strength available. Such near maximum effort is very fatiguing. Fortunately, there is good evidence that both muscle strength and endurance in the elderly respond to training and an increase of 20% is achievable with two to three weeks of structured exercise.

Immobility leads to bone loss as a result of decreased bone formation and increased bone resorption. Weight bearing stimulates osteoblast formation which is greatest at the point of maximum stress. Athletes have a higher bone density than sedentary people but only if the exercise they take is of a weight bearing nature. Therefore, although swimming is good exercise for the elderly, it does not improve bone mass. Exercise in the early years determines peak bone mass which is reached at around 35 years of age. The effect of exercise after the menopause on bone mass is unclear since two randomised controlled trials have reached differing conclusions. So far there have been no studies looking at the effect of exercise on fracture rates.

So, how much exercise should be advised? A little exercise is better than none, but more is better than less. It is helpful to remember that the effect of three 10-minute walks is the same as that of one 30-minute walk, and this often encourages the elderly. It is clear that exercise must continue if the benefits are to continue.

Prevention of falls

Although risk factors are important in the general population, they are less helpful in the assessment of the individual patient. Prevention can be thought of as primary in those who are not yet fallers, secondary in those who have had at least one fall and tertiary in those who are fall prone. It involves identification of the risk factors, modification of the risks and finally reassessment, which is often forgotten in practice. Strategies in primary prevention aim to prevent falls and include screening for the high-risk elderly, encouraging physical activity, rational prescribing, a sensible diet and education to increase accident awareness. Secondary prevention should include a complete medical assessment of the faller to identify any remediable risk factors, rehabilitation and removal of environmental hazards. In tertiary prevention the aim is to reduce the risk of injury such as by the use of hip protectors and ensuring access to help after a fall.

Guidelines for the management of falls

Guidelines are to be published jointly by the Royal College of Physicians of London and the British Geriatrics Society, and six areas are covered; assessment, management, information sharing, team-based care, liaison and quality activities. Assessment should begin at the first contact with the patient and there needs to be agreed responsibilities for each member of the team. Management of the patient is based on the assessment and should note action for common problems and treatment by an agreed protocol. Information sharing involves cumulative assembly, possibly by common notes, and should reflect team-based care. Team-based or multi-disciplinary care involves all relevant parties with clear roles and a key worker. There must be systematic team meetings. Patient-focused liaison with both patients and carers is important. Quality should be monitored by clinical audit and be linked to organisational activities.

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The lectures on the causes and consequences of falls, balance and falls and rehabilitation appear elsewhere in this issue.