

Falls in the older patient – time to change our views

Falls are an important problem area in the elderly.

D WEICH, MB ChB, MMed (Int Med), DM, FRCP (London), FCP (Hon)
Geriatrician, Private practice, Somerset West

After retiring from academia at the University of the Free State in 2001, Professor Weich spent 5 years in the UK working as a geriatrician. During this time he developed a special interest in the problems of elderly patients who had had falls. He started the very active Falls Clinic at the St Mary's Hospital on the Isle of Wight. He visited several similar units in England and also attended international congresses. His new private practice in Somerset West is well equipped to investigate, in a non-invasive manner, the causes of falls in older patients.

Medical importance of falls

Although falls in the elderly have been recognised as one of the 'giants of geriatrics' by geriatricians, they remain a problem area – possibly because there are many reasons for falling and it is often time consuming to elicit the specific causes in a patient. The elderly do not report falls if they have not injured themselves.¹

The incidence of falls rises as the population ages. In England about 35% of people over 65 years of age may fall. At the age of 80 the figure increases to 45%. We are working with a greying population in whom 10% of these falls result in fractures, emphasising the importance of falls in the elderly.²

The incidence of falls among the frail elderly living in nursing homes is even higher. At the St Mary's Hospital on the Isle of Wight almost all of the approximately 240 hip fractures that occur annually in the elderly are related to falls. The difference between falls in young children and athletes and in the elderly is that in the last group the injury is more severe and there are more underlying medical problems affecting the prognosis.³

It must, however, be emphasised that falling is not always what it seems to be. In our clinic on the Isle of Wight we diagnosed 4 patients with previously unrecognised epilepsy and 2 with brain malignancies in a group of about 500 who had fallen. In patients with neurocardiogenic conditions orthostatic hypotension was by far the most common cause of falling, often associated with poor blood pressure control – also discussed by Sclater and Alagiakrishnan.⁴ It is now recognised that a vasovagal syncopal attack in an older patient, is not benign, as is usually the case in younger patients because it may be related to episodes of sinus arrest when fully investigated. Brignole *et al.*⁵ found 54% to have prolonged episodes of asystole lasting more than 3 seconds. In older men the possibility of a sensitive carotid sinus must be kept in mind.

Cardiovascular causes are important because they may be related to underlying disease needing treatment. One should be able to diagnose aortic stenosis clinically. Cardiac failure both with systolic impairment and normal ejection fraction is associated with syncope. Arterial atheromatous disease of the carotid system is easily recognised as a cause of syncope and therefore of falls. Rhythm disturbances, especially when associated with cardiac failure, can also be the cause of falls. Drug treatment is often blamed as the cause of falling, but drugs are usually specifically indicated. If a patient is taking more than 4 drugs the indications for each drug should be reconsidered. If diuretics, sedatives and antidepressants are used too liberally they often contribute to the causes of falling. The question should be asked whether it is the drug or the disease for which the drug is administered that is causing the falls.

Several metabolic causes for falls may play a role. Hyponatraemia and hypothyroidism should be kept in mind.⁶ Anaemia may be a cause of falling, but it may also aggravate other causes, e.g. those of cardiac origin.

Pain on mobilising is a problem, e.g. in patients with rheumatic disease, especially when it leads to muscle weakness. Severe pain may be the cause of vasovagal syncope. Muscle weakness has several causes and can lead to falling, but muscle weakness after prolonged bed rest in the elderly must be prevented.

Risk factors

The active older person who has had a single fall that can be explained adequately need not be investigated further if there was no severe injury, e.g. a fracture. If, however, the patient has had two or more falls in the last 6 months the causes must be investigated, because the risks of falling again, of fracture(s) and of the almost universal complication of loss of confidence are high. Tinetti *et al.*⁷ investigated the risk of falling and reported that falls will occur in 27% of elderly patients who do not have any of the risk factors listed below. If however the patient had 4 or more risk factors the percentage increased to 78%.

Hip weakness, taking 4 or more medications and unstable balance in combination will push the risk to 100% for falling in the following year.⁸

Examining the patient

A thorough history and clinical examination is vital for a diagnosis to be made. It should include supine blood pressure measurement after the patient has been lying down for at least 5 minutes, as well as after standing for 1 minute and 3 minutes. A resting ECG and an echocardiogram could also help to rule out valvular disease and cardiac failure. A chest radiograph may be helpful to rule out cardiac failure. Considering the list of possible causes we must exclude hyponatraemia and hypothyroidism. It must be emphasised that all the contributing factors must be listed and attended to. If, after the

Risk factors for falls in the elderly

Muscle weakness	History of falls
Gait deficit	Balance deficit
Use of assistive device	Visual deficit
Arthritis	Impaired activities of daily living
Depression	Cognitive impairment
Age > 80 years	

Table I. Causes of falls in the older patient

Balance abnormalities	Cardiogenic causes
Vascular pathology	Aortic stenosis
Loss of peripheral sensation	Rhythm disturbances
Brainstem pathology	Cardiac failure
Neurogenic causes	Medications
Afferent causes	Sedatives
Poor eyesight	Antidepressants
Loss of position sense	Diuretics
Central causes	Metabolic causes
Stroke disease	Hyponatraemia
Parkinson's disease and syndrome	Hypothyroidism
Epilepsy	Anaemia
Dementia	Painful joints
Brain tumours	Muscle weakness
Normal-pressure hydrocephalus	Myopathy
Degenerative central nervous system disease	Bed rest
Efferent causes	Mechanical causes
Autonomic nervous system dysfunction	Clutter
Motor neuron dysfunction	Unfitness
Neurocardiogenic causes	Shoewear
Orthostatic hypotension	Musculoskeletal pain
Poorly controlled hypertension	
Vasovagal attacks	
Carotid sinus syndrome	

clinical evaluation and special investigations, the patient has still not been diagnosed one must consider further investigation, keeping in mind the possibility of unrecognised syncope. This is especially important if the patient is at risk because of his/her occupation (drivers of passenger vehicles, pilots, persons using dangerous equipment or working in surroundings where a fall may have serious consequences).

When the patient is older and at risk of serious injury such as fracture the matter must be taken further. In view of the possibility of prolonged sinus arrest during a vasovagal attack referral to a cardiologist must be considered. The head-up tilt test, if done correctly, can be of great diagnostic value.^{9,10} Professor Rose Kenny, the eminent head of the Department of Geriatric Cardiology, University of Dublin, advises that equipment that can give cardiac beat-by-beat blood pressure as well as other parameters is essential to obtain the best diagnostic results safely (personal communication, 2005). Modern equipment gives cardiac rate and rhythm, cardiac output beat by beat, and the activity of the sympathetic and parasympathetic nervous system continuously, contributing to a much more accurate diagnosis. When Professor Kenny investigated the problem of the patient not recognising syncope, she found that even medical students who understood the disorder did not always realise that they had had a syncopal attack after it had been induced by tilt-table testing. Elderly patients will tend to explain a fall as tripping over

something because they cannot remember the syncopal attack. If this is not identified by the doctor the patient will not benefit. The causes of syncopal attacks and falls overlap and a combination is bound to occur.

Prevention of falls and their complications

If the causes of falls are not recognised they will be difficult to prevent.

The complications may be reduced by diagnosing and treating osteoporosis. Once the treatment of this condition has been started one can expect a reduction in the risk of fracturing after 6 months. Hip protection wear has not made a difference in real life – this may be because a protector that is not worn cannot protect the person. In the UK impact-absorbing floors are being designed for nursing homes. Nursing staff in hospitals and frail care units may prevent unnecessary falls with relatively simple measures. The use of mechanical as well as chemical restraints to control movement in the delirious or demented elderly should be abandoned. Using cot sides may actually increase the chances of patients being injured. Reviewing the list of medications is the duty of the doctor. Try not to use tranquillisers or sedatives. If orthostatic hypotension is diagnosed reconsider the use of diuretics and antihypertensive medication. Exercise programmes that include balance, muscle strength as well as general fitness training have been shown to make a difference.¹⁰ Tai chi sessions have become very popular.

References

1. American Geriatric Society, British Geriatrics Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention. Guideline for the prevention of falls in older persons. *J Am Geriatr Soc* 2001; 49(5): 664-672.
2. Kenny RA, O'Shea D, Walker HF. Impact of a dedicated syncope and falls facility for older adults on emergency beds. *Age Ageing* 2002; 3: 272-275.
3. Oliver D, Connelly JB, Victor CR, *et al.* Strategies to prevent falls and fractures in hospitals and care homes and cognitive impairment: Systematic review and meta-analyses. *BMJ* 2007; 334: 82; 49; 664-672.
4. Sclater A, Alagiakrishnan K. Orthostatic hypotension. A primary care primer for assessment and treatment. *Geriatrics* 2004; 59: 22-27.
5. Brignole M, Sutton R, Menozzi C, *et al.* Early application of an implantable loop recorder allows effective specific therapy in patients with recurrent suspected neurally mediated syncope. *Eur Heart J* 2006; 27: 1085-1092.
6. Renneboog B, Musch W, Vandermergel X, Manto MU. Mild chronic hyponatremia is associated with falls, unsteadiness, and attention deficits. *Am J Med* 2006; 119: 71.
7. Tinetti ME, Speechley M, Ginter SF. Risk factors for falls among elderly persons living in the community. *N Engl J Med* 1988; 319: 1701-1707.
8. Robbins AS, Rubenstein LZ, Josephson KR, *et al.* Predictors of falls among elderly people. Results of two population-based studies. *Arch Intern Med* 1989; 149: 1628-1633.
9. Brignole M, Alboni P, Benditt D, *et al.* Guidelines on management (diagnosis and treatment) of syncope. *Eur Heart J* 2001; 22: 1256-1306.
10. Brignole M, Alboni P, Benditt D, *et al.* Guidelines on management (diagnosis and treatment) of syncope – update 2004. Executive summary. *Eur Heart J* 2004; 25: 2054-2072.

In a nutshell

- Falls are a major cause of morbidity and mortality in the older person.
- If a patient has had two falls in 6 months the causes should be fully investigated.
- An elderly patient usually has multiple causes for falling.
- Older people do not recognise the fact that they have had a syncopal attack.
- Syncopal attacks must be recognised by the medical practitioner and treated.
- Iatrogenic causes of falls must be prevented.
- Nurses can reduce the number of in-hospital or nursing home falls with simple methods.
- Prevention of falls and their complications is the best therapy.