

Dementia and falling

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People with dementia are four to five times more likely to experience falls than older people without significant cognitive impairment.¹ The consequences of a fall may be distress and anxiety for the person and their family, limitation of activities, a move into residential care, fractures or even death, and the associated economic costs of all of these. Falls in residential care can cause anxiety and guilt in staff. Unhappy relatives may complain, leading to managerial demands to reduce risk to the organisation that do not necessarily benefit residents.

Rehabilitation is more difficult if the person has moderate or severe cognitive impairment, and the majority of people with dementia experiencing a hip fracture never achieve their previous level of functional capacity.²

Thus, it is important to try to understand why people with dementia fall and how we might reduce the number of falls and prevent injury.

Why people with dementia fall

Dementia-related changes

As well as memory disturbance, people with dementia have impairment in thinking, orientation, comprehension, calculation, language, perception and judgment. There are also psychological, behavioural and motor symptoms.

These deficits increase the likelihood of falls. For example, if memory is impaired, people forget to avoid hazards in their environment; they will not remember to get out of bed slowly to mitigate postural hypoten-

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sion. The person with poor new learning skills will have difficulty navigating in a new situation and may place himself at risk. Problem-solving may be inadequate as it requires that the person hold information in mind while thinking about ways to eliminate or reduce risk.

Perceptual difficulties often mean that the person is unaware of changes in levels, making them more likely to miss a step or lose their balance on a slope. Loss of awareness of personal space means that, especially in residential care, people come too close to others and are pushed away. Some have difficulty seating themselves; 'angle parkers' do not seem able to line themselves up with the chair, possibly because of perceptual difficulties. Some 'premature parkers' sit down too early and miss the seat and 'slitherers' slide backwards towards the chair from some distance away. This may be because of difficulty delaying gratification.* Attempting to sit in an already occupied chair can result in an altercation and someone falling over!

The person with poor judgment fails to recognise risk, e.g. the eld-

erly man who suddenly decides to scrape the lichen off his roof. Even if the person becomes aware of a risk, the slowness of reactions, poor problem-solving and loss of protective reflexes mean that they cannot avoid falling anyway. Impaired comprehension may mean that the person cannot take in or respond to warnings.

The effort of doing something mentally taxing appears to affect balance. Robert Davis³ writes a first person account of what it is like to have Alzheimer's disease:

'Even going into a supermarket and looking at rows and rows of cans is mentally exhausting. When I do become exhausted, my walk becomes staggering. In a supermarket I can make it very well if I have a trolley to push around; or when walking in crowds I cling to the wall in order to give my hands something to touch to keep from going sideways. There is always the tendency in the confusion of a crowd to suddenly step sideways and perhaps keep on going until I fall.'

Psychotic symptoms can lead to risky behaviour: a frail lady with Lewy Body dementia heard boys throwing stones on her roof at night and went

* I am indebted to Dr Elizabeth Spellacy for these titles and descriptions of sitting-down patterns of some people with dementia.

outside to chase them away – not only hallucinations and delusions, but also a bad judgement call. She fell in the dark and broke her hip.

Someone who is agitated and pacing will not be looking out for external dangers.

There is evidence that people with dementia walk too fast for their situation, perhaps because of a loss of control of gait velocity.⁴ If people become less active, either from reduced socialisation or because concerned caregivers limit their walking, they become physically weaker. There is 'loss of condition' as the dementia progresses and the person becomes frailer with poor balance and posture.

It is also not uncommon for the person (or others) to slip in a puddle of urine if they have become incontinent.

Falls in different types of dementia

Allan et al.⁵ found gait and balance disturbances in 93% of people with Parkinson's dementia (43% with Parkinson's disease alone), 79% of those with vascular dementia, 75% of people with Lewy Body dementia, 25% of those with Alzheimer's disease and 7% of controls.

Obviously cerebrovascular disease can cause vascular dementia and any of the following: stroke, hemiplegia, gait, balance, motor and sensory abnormalities. In Lewy Body or Parkinson's dementia, expect Parkinsonism, syncope and orthostatic hypotension; brief episodes of loss of consciousness may be evident as falls. Hallucinations and delusions are common in both conditions and may result in agitation or other behavioural changes, placing the person at risk. Fronto-temporal dementias can cause disinhibition and poor judgment with subsequent risk-taking. This type of dementia is often associated with movement disorders, as in Huntington's disease, that severely compromise balance and gait.

Co-morbid conditions

Acute conditions, such as infections or constipation, cause balance and

gait changes. The risk of developing delirium is high in people with pre-existing dementia and associated with increased confusion and falls risk. Epileptic seizures occur in 10–22% of people with Alzheimer's disease.⁶ Reduced visual acuity, arthritis and cardiac conditions may contribute to falling. As it can be difficult to get an adequate history from the patient, collateral history, thorough examination and investigation are necessary.

Drugs

Drugs of various types increase confusion and the likelihood of falls (and they may be taken incorrectly, e.g. missing anticonvulsants or taking too many diuretics). Even a small amount of alcohol will affect balance and sometimes people forget they have already had a drink and help themselves to another or two!

Medication with strongest links to an increased risk of falling⁷

- Serotonin reuptake inhibitors and tricyclic antidepressants
- Neuroleptic agents
- Benzodiazepines
- Anticonvulsants
- Class A anti-arrhythmics.

Management

Oliver et al.⁸ analysed studies of fall prevention in hospitals and care homes, finding some evidence that multifaceted interventions in hospital reduced the numbers of falls, and that the use of hip protectors in care homes prevented hip fractures. They noted a lack of investigation into interventions, specifically for those with cognitive impairment or dementia. With our present state of knowledge, falls reduction strategies for people with dementia are the same as those for other older people in general⁹ with allowance being made for the person's cognitive impairment.

Medical review

Conditions pre-disposing to falls should be treated, bearing in mind that the person may not recognise they have a problem, and compliance

can be a challenge. Medication is best reduced to a minimum, any unnecessary pills being stopped. If medication is needed, family or other carers might need to supervise this and/or provide drugs in blister packs.

People with dementia do develop depression and psychosis, conditions that may need pharmacological treatment with medication that is known to increase falls risk – a difficult decision. If drugs are necessary, monitor closely for effectiveness and side effects, reduce the dose to a minimum and stop as soon as possible.

GPs are often pressured to prescribe medication for challenging behaviours. Consideration should first be given to managing physical symptoms (e.g. pain, hunger), environmental problems (e.g. noise, boredom) and caregiver approaches such as taking the agitated person for a walk. Ideally, bearing in mind the adverse effects of these drugs on balance, gait and cognition, it is better not to start, though there will be times when they are necessary. They should be reviewed regularly and used for as short a time as possible. People usually pass through these difficult stages as the dementia progresses.

Home modifications and technology

An occupational therapist can assess the home for risk, but too many changes will make the environment unfamiliar to its occupant! People can usually follow rails, but ramps can be a problem if the person has trouble with depth perception.

The person is unlikely to remember new instructions about how to work a personal alarm or when to press a call bell. They may not know how to get help once they fall. Night lights help nocturnal risers to find their way around and pressure pads will alert carers that their charges are up and perhaps at risk. Fall monitors worn on the body detect the motion characteristic of a fall (vertical velocity changes) and other technology, such as infrared movement sensors, can determine whether someone is inactive for longer than might be

expected (perhaps lying unconscious) and an alarm triggered. This technology is still in its early days and not yet terribly reliable.

Supervision

Some activities, such as showering, are associated with falls; a personal care assistant or family member can supervise at home (if the person remembers to wait for them). In hospital care, 80% of falls are unwitnessed.¹⁰ Observing residents and patients, particularly those prone to falling, goes a long way to preventing falls. Care staff sometimes find it hard to 'just watch' instead of 'doing' something and need to be reassured that this is a very important role. The risk in residential care may be higher at certain times, e.g. when shifts are changing, 4–8pm when people are 'sundowning', when staff are tied up with meals or getting people to bed. People may be tripped or pushed (i.e. other residents may cause the problem). Certain residents may need to be kept apart!

Balance and gait training and muscle strengthening exercise

Family worries about the community-dwelling person with dementia being out of the house alone and diminished socialisation may combine to reduce physical activity. The person with dementia may lack the mo-

tivation or ability to engage in formal exercise programmes on their own but may greatly enjoy physical exercise, especially in a group. Local Alzheimer's Societies often have walking groups. (Exercise can also help reduce agitation.)

Hip protectors

Hip protectors with hard shells can be uncomfortable if body fat is lost as dementia progresses and may not be tolerated; soft-shelled hip protectors are available. The person with dementia may not recognise the garment as underwear or comprehend why hip protectors need to be worn as well as forgetting to put them on. Finally, if it is hard to get the pants down quickly, the only-just continent person may become incontinent; gusset-free hip protectors may be more suitable in these situations.¹¹

Miscellaneous

Check footwear, clean glasses and turn on hearing aids. Some carry (or forget) their walking frame, though eventually with repetition may become used to the security of the frame and learn to use it.

Restraint

There is no strong evidence supporting the use of restraint in preventing falls in people with cognitive

impairment. Tinetti¹² showed that when restrained and unrestrained patients were compared, 4% of unrestrained vs 15% of restrained patients suffered serious injury. Other studies show that the removal of restraints makes no difference to the rate of fall-related injury.¹³ Restraint can lead to agitation, muscle wasting, infection, pressure sores and deconditioning.¹⁴

As the use of restraint brings no clear advantage in terms of reducing injury and impinges upon the dignity and autonomy of patients, it seems that physical restraint would be best avoided. This may seem counter-intuitive to staff and families and needs to be clearly explained when the option of restraint is being considered for people with dementia.

In summary

Cognitive impairment increases falls risk for older people, often with dire consequences. Management may involve difficult choices. However, ensuring a safe environment, supervision, treatment of medical problems, minimising drug use and encouraging activity may help reduce damage from falling, at the same time maintaining quality of life.

Competing interests

None declared

References

- van Doorn C, Gruber-Baldini AL, Zimmerman S, Hebel JR, Port CL, Baumgarten M, Quinn CC, Taler G May C, Magaziner J. Epidemiology of Dementia in Nursing Homes Research Group. Dementia as a risk factor for falls and fall injuries among nursing home residents. *J Am Geriatr Soc* 2003; 51: 213-1218.
- Ballard C, Cream J. Drugs used to relieve behavioural symptoms in people with dementia or an unacceptable chemical cosh? *Int Psychogeriatr*. 2005; 17 (1):12-22.
- Davis R. My journey into Alzheimer's disease. Wheaton, Illinois: Tyndale House Publishers Inc.; 1989. p 105.
- van Iersel MB, Verbeek AL, Bloem BR, Munneke M, Esselink RA, Rikkert MG. Frail elderly patients with dementia go too fast. *J Neurol Neurosurg Psychiatry*. 2006; 77(7):874-876.
- Allan LM, Ballard CG, Burn DJ, Kenny RA. Prevalence and severity of gait disorders in Alzheimer's and non-Alzheimer's dementia. *J Am Geriatr Soc* 2005; 53:1681-1687.
- Mendez MF, Lim GTH. Seizures in elderly people with dementia. *Epidemiology and Management Therapy in Practice. Drugs Aging* 2003; 20(11):791-802.
- Tinetti ME. Preventing falls in elderly persons. *N Eng J Med* 2003; 348(1) 42-49.
- Oliver D, Connelly JB, Vidtor CR, Shaw FE, Whitehead A, Genc Y, Vanoli A, Martin FC, Gosney MA. Strategies to prevent falls and fractures in hospitals and care homes and effect of cognitive impairment: systematic review and meta-analyses. *BMJ* 2007; 334:82.
- Gillespie LD, Gillespie WJ, Robertson MC, Lamb SE, Cumming RG, Rowe BH. Interventions for preventing falls in elderly people. *Cochrane Data Base of Systematic Reviews* 2003, Issue 4. Art No.: CD000340. DOI: 10.1002/14651858.CD000340.
- Oliver D. Bed falls and bedrails – what should we do? *Age Ageing* 2002; 31:415-418.
- Leonard C. Are hip protectors helpful in older people with dementia? *J Dementia Care Jan/Feb* 2007.
- Tinetti ME, Liu W, Ginter SF. Mechanical restraint use and fall-related injuries among residents of skilled nursing facilities. *Ann Intern Med* 1992; 116: 369-74.
- Ejaz F, Jones J, Rose M. Falls among nursing home residents: an examination of incident reports before and after restraint reduction programs. *J Am Geriatr Soc* 1994; 42:960-4.
- Mahoney J. Immobility and falls. *Clin Geriatr Med* 1998; 14:700.