

Recurrent falls as an initial presentation of dementia: A case report

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SUMMARY

Falls among the elderly are quite common, particularly as the aging population continues to grow. Physicians are likely to encounter more patients presenting with either their first fall, multiple falls, or those identified as being at risk for future falls. Investigating the circumstances surrounding a fall, gathering eyewitness accounts, and conducting a thorough physical assessment of the patient can provide valuable insights into the underlying causes. This information is crucial for developing strategies to prevent future falls. We present an elderly man who presented to primary care with a history multiple falls in the absence of underlying neurological or gait issues and later was found to have vascular dementia on radiologic imaging. This case report describes the approach, assessment and management of falls among elderly with dementia highlighting the role of the multidisciplinary team approach and management based on the latest evidence.

INTRODUCTION

Fall in elderly is described as an event which results in a person coming to rest inadvertently on the ground or other lower level.¹ Falls can happen anywhere, whether indoors or outdoors. Recurrent falls are defined as two or more falls reported over the last 12 months.² More than 25% of elderly experience one fall each year which leads to hospitalisation, disability and death. In Malaysia, the prevalence of falls and recurrent falls in among older adults in the community is about 72.5% and 27.5% respectively and the common causes are advancing age, sensory deficit, reduced lower limb strength, medication use, sarcopenia and cognitive impairment.² However, identifying cognitive impairment as a major cause for fall is challenging, as all other possible underlying causes must first be ruled out.

People with Alzheimer or any type of dementia commonly present with memory issues and deterioration in functional activities of daily living which are either noticed by the patients themselves or by their family members. However, people with dementia are at risk of falls up to 4 years preceding the diagnosis and peak at the point of diagnosis of dementia. Hence, screening for cognitive disorders among elderly with falls is essential.

We present an elderly man who complained of recurrent falls over 3 years. His, gait, balance, general and neurological

examination were all normal. However, on further evaluation, he was detected to have vascular dementia which was later attributed as the cause for his recurrent falls. The approach and management of patients presenting after a fall is summarised based on the current evidence and guidelines.

CASE PRESENTATION

A 70-year-old man presented to primary care with history of recurrent falls. He experienced three to four falls a year over the past 3 years which mostly occurred outdoors. The last fall was 3 weeks earlier when he was walking towards his car at the carpark. He did not trip over anything but felt that he could not stop walking when he reached the car hence knocked himself against the car and fell. He sustained abrasions on his face and right knee during that episode of fall. He claimed that the previous episodes of falls were similar and occurred while he was walking. There was no history of any aura, dizziness or seizures prior to the falls. There were also no eyewitness to these incidents. He had underlying type 2 diabetes, hypertension, dyslipidaemia and underwent cardiac bypass surgery in the year 2018. His current medications were aspirin 100 mg OD, metformin 500 mg BD, gliclazide MR 120 mg OM, atorvastatin 40 mg and dapagliflozin 10 mg OD. On further questioning, he described occasional memory issues such as forgetting where he parked his car or kept his keys for about a year which he attributed to advancing age. He also suffered from frequent insomnia and inability to sustain his focus. The patient was a widower and lived with his daughter. Their relationship was strained and there were no other family members. Over the years, he experienced isolation and lost interest in life.

Physical examination showed a well kempt elderly man. General physical examination was normal. His height was 160.5 cm, weight was 53.3 kg and BMI was 20.8 kg/m². There was no orthostatic hypotension (repeated blood pressure on lying down was between 120/69 to 125/70 and standing blood pressure was between 121/78 to 130/80 mmHg). There were no spinal deformities. There was bilateral knee crepitus suggestive of osteoarthritis without any joint abnormality. His vision with glasses, hearing and gait were also normal. Clinically, sarcopenia was absent as patient had acceptable hand grip and was able to rise from the sitting position. Signs of Parkinson's disease such as tremors, muscle stiffness or bradykinesia were all absent. His cardiovascular and neurological examination were normal.

This article was accepted: 22 August 2024

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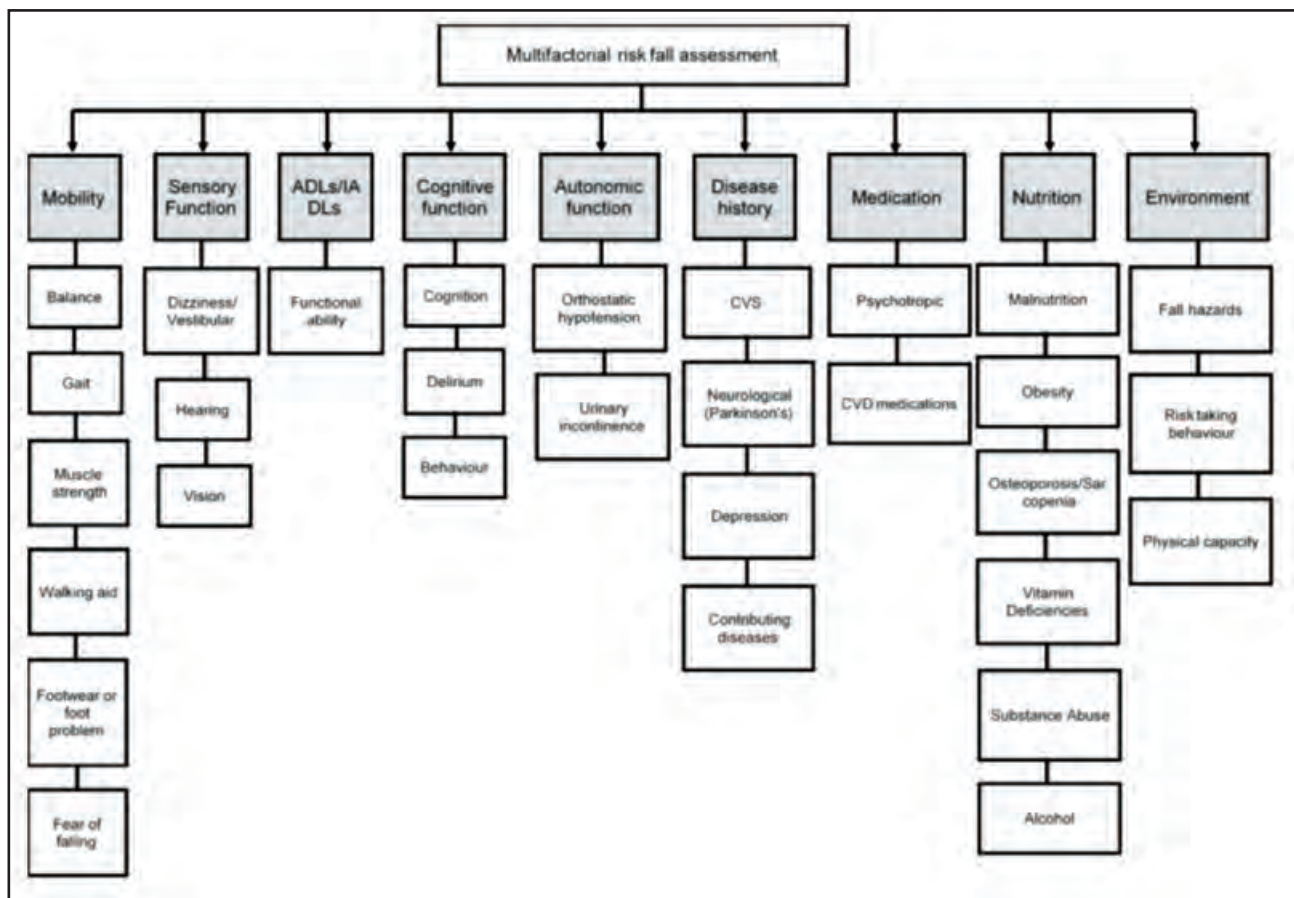


Fig. 1: Flow chart summary of assessment of elderly with fall.²

His balance was good. (tandem stand test) His gait was assessed using the Timed Up and Go (TUG) test which was completed in less than 15 seconds without assistance. His instrumental activity of daily living (IADL) showed that he had high function and was independent (7/8 score using the Lawton-Brody IADL scale). Screening for depression using the Patient Health Questionnaire-9 (PHQ9) revealed mild depression (score 7/27). Cognitive assessment using the Montreal Cognitive Assessment (MoCA) showed moderate cognitive decline with a score of 17/30 with difficulties in memory, attention, language, delayed recall and cognition, suggesting dementia.

Initial investigations to rule out causes for dementia such as full blood count, thyroid function test and vitamin B12 level were all normal. His HbA1c was 7.9%. Computed tomography (CT) brain showed multifocal chronic infarcts with cerebral atrophy suggesting vascular dementia. A possible diagnosis of recurrent falls due to underlying vascular dementia with mild depression, suboptimal glucose control due to poor compliance and social issues was made. The long-term plan for him was to prevent future falls, to improve glycaemic control and to be referred to the neuro-medical team for management of vascular dementia. He was referred to physiotherapy for lower limb muscle

strengthening exercises and balance. His medication for diabetes, hypertension and dyslipidaemia was continued.

Efforts to contact his family to discuss support, medication supervision and adherence issues, were unsuccessful however, his friend helped to accompany him for follow up appointments at the clinic and a referral to social worker was made. After the third follow up, the patient defaulted on all appointments and remained uncontactable. One year later, patient was brought unconscious to a near by hospital after a fall. He had sustained subdural haemorrhage and passed away a few days later in the ward.

DISCUSSION

As the world aging population increases, falls and fall related injuries among elderly will become a growing challenge. About one third of adults above the age of 65 years would experience a fall or fall related injuries annually leading to disability, hospitalisation or death.

People with cognitive impairments are eight times more likely to experience falls compared to those without.³ This is due to the decline in the executive function which is the cognitive domain controlling decision making and problem

solving, which are essential requirements for execution of complicated tasks such as gait, balance, memory and attention.⁴ This causes changes in gait, restricts mobility, and increases the risk of fall. Vascular dementia can be classified as post-stroke dementia and vascular dementia without a recent infarction. The latter is also known as Covert cerebral small vessel disease (ccSVD) which is commonly found on neuroimaging among people who do not have any obvious neurological symptoms such as the patient in this case report.⁵

Approach of Elderly with Falls

Understanding the nature of fall, identifying the potential contributing risk factors of fall and assessing the psychosocial effects following a fall are all important components of assessment. A detailed history should include circumstances of fall, mechanism of fall and activity at the time of fall and associated symptoms. Presence of any functional deficits, injuries and psychological impact of each episode of fall should also be assessed. Delirium and behavioural problem should be ruled out. All this information helps to predict the likelihood of future falls and helps to individualise the management plan for each patient. However, elderly patients with dementia may not be able to provide these details as they suffer with recall issues. Hence details on the circumstances of fall from the family members, caregivers or eyewitness would be helpful.

The approach to fall can be daunting as there is a long list of possible causes. The suspicion of cognitive impairment as a possible cause for the recurrent falls is based on the exclusion of all other possible causes. The World Guideline for Falls Prevention and Management for older adults recommends a comprehensive multifactorial falls risk assessment in nine major domains for patients presenting with falls.² This includes mobility status, physical examination and cognitive assessment. Initial investigation for people with suspected cognitive impairment include full blood count, biochemistry tests, thyroid function test, serum vitamin B12 and folate levels to exclude dementia-mimicking conditions. Non-contrast CT or MRI brain modalities help to exclude neurological cause such as infarct, haemorrhage or brain tumour. The summary of the recommended approach to elderly with falls by the world guidelines for falls prevention and management for older adults is depicted in Figure 1.

Management of Elderly with Falls

The main objective of managing elderly after an episode of fall is to minimise the risk and prevent future falls. This can be done by identification of risk factors and addressing the cause of fall by implementing individualised intervention strategies.

Since patients with dementia lack the ability to care for themselves, a shared decision-making between physician, patient and their family members or caregivers is crucial as it helps to enhance treatment adherence and prevent future falls. The World Guideline for Falls Prevention and Management in older adults recommends a comprehensive approach involving a multidisciplinary team involving physiotherapist and occupational therapist. Physiotherapists can provide supervised exercise programs with an aim to enhance muscle strength, posture and balance. Exercise has

been shown to be one of the most effective methods to reduce risk and rate of fall using balancing, challenging and functional exercises such as sit-to-stand and stepping.² Tai chi practice has been shown to reduce the risk of fall among elderly by 50%.⁶ Occupational therapists are able to identify potential hazards in the home environment and suggest safe home arrangement.²

Management of patients who have cognitive impairment with clinical or radiological evidence of cerebrovascular pathology require strict management of vascular risk factors such as stop smoking, optimal blood pressure, glucose and dyslipidaemia control. The role of aspirin in the management of cognitive impairment remains uncertain however, it helps to reduce the risk of further infarcts among patients without previous intracranial haemorrhage. Cholinesterase inhibitor may be tried in patients with vascular dementia with cognitive decline although its effectiveness in reducing falls among people with dementia is inconclusive as studies show contradicting evidence.⁷

Managing our patient was particularly challenging as he had social issues and frequently defaulted follow-up appointments. This case report shows that managing the elderly with dementia and fall requires collaboration of a multidisciplinary team consisting of physician, physiotherapist, occupational therapist, family members and social worker to manage the medical condition and to execute effective fall prevention strategies.

CONCLUSION

Falls are more common among elderly with cognitive decline compared to those with intact cognition. Hence, physicians must be vigilant to detect possible dementia in elderly presenting with falls as this may be an early sign. A comprehensive assessment of history, physical examination and investigations to rule out all other possible causes for fall is essential before considering dementia as a possible cause for falls in the elderly. Individualised intervention is important as these patients will need long term support and care in a safe living environment to prevent fall related morbidity and mortality. Absence of support for these patients renders management more challenging and can result in poor prognosis.

ACKNOWLEDGEMENT

The authors would like to thank the multidisciplinary team involved in managing this patient.

DECLARATION

The authors declare no actual or potential conflict of interest in relation to this article.

REFERENCES

1. Montero-Odasso M, van der Velde N, Martin FC, Petrovic M, Tan MP, Ryg J et al. World guidelines for falls prevention and management for older adults: a global initiative. *Age Ageing* 2023; 52(9): afac205. Falls (World Health Organization) <https://www.who.int/news-room/fact-sheets/detail/falls>

2. Allan LM, Ballard CG, Rowan EN, Kenny RA. Incidence and prediction of falls in dementia: a prospective study in older people. *PLoS One* 2009; 4(5): e5521.
3. Muir SW, Gopaul K, Montero Odasso MM. The role of cognitive impairment in fall risk among older adults: a systematic review and meta-analysis. *Age Ageing* 2012; 41(3): 299-308.
4. Eric ES, Clinton BW. 2023. Etiology, clinical manifestations and diagnosis of vascular dementia. [cited Jan 2024]. Available from: <https://www.uptodate.com/contents/etiology-clinical-manifestations-and-diagnosis-of-vascular-dementia>.
5. Lomas-Vega R, Obrero-Gaitán E, Molina-Ortega FJ, Del-Pino-Casado R. Tai chi for risk of falls. A Meta-analysis. *J Am Geriatr Soc*. 2017; 65(9): 2037-43.
6. Ahuja M, Siddhpuria S, Karimi A, Lewis K, Wong E, Lee J, et al. Cholinesterase inhibitors and falls, syncope and injuries in patients with cognitive impairment: a systematic review and meta-analysis. *Age Ageing* 2023; 52(11): afad205.
7. Santiago Martinez P, Lord SR, Close JCT, Taylor ME. Associations between psychotropic and anti-dementia medication use and falls in community-dwelling older adults with cognitive impairment. *Arch Gerontol Geriatr* 2023; 114: 105105.