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Case Report

Symptomatic Orthostatic Hypotension in a 66-Year-Old Man Receiving Amlodipine: A Case Report

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Abstract

Background: Orthostatic hypotension is a major cause of dizziness, syncope, falls, and loss of independence in older people. The age-related changes in the cardiovascular regulation system, concomitant diseases, medications, and behavioral aspects may impair the individual's ability to maintain the blood pressure while being in the standing position. **Case Presentation:** A 66-year-old man with more than 10 years of history of essential hypertension had repeated complaints of light-headedness, orthostatic dizziness, fainting with falls. The man used amlodipine 5 mg once per day with inconsistent adherence and consumed alcohol (approximately 1 L of 5.5% beer nightly). Blood pressure of the patient after 10 minutes of resting in the supine position was 124/78 mmHg with heart rate 72 bpm. Blood pressure of the man 3 minutes after active standing reduced to 88/54 mmHg with heart rate 72 bpm. It is 36 mmHg reduction in systolic blood pressure and 24 mmHg reduction in diastolic blood pressure. These changes met the diagnostic criteria for orthostatic hypotension, without any compensatory increase in heart rate. Other causes of syncope were considered during clinical assessment. The amlodipine dose was reduced from 5 mg to 2.5 mg once daily The supportive treatment and fall prevention measures were undertaken, and the patient was educated about hydration, gradual change of body position, alcohol restriction, and follow-up. At the three-week review, his dizziness had improved and no further falls were reported. **Conclusion:** This case highlights the importance of standardized assessment of orthostatic vital signs in elderly people with dizziness, syncope, or falls even when blood pressure in the supine position is within normal limits. Though the use of amlodipine and alcohol consumption were possible contributing factors, they cannot be considered as proven causes of orthostatic hypotension of the patient. Because several measures were introduced together, the improvement cannot be attributed to any single intervention.

Keywords: *Amlodipine; Ethanol Consumption; Postural Hypotension; Senescence; Sub-Saharan Africa*

Introduction

Orthostatic hypotension is marked by excessive reduction in blood pressure on standing up. This condition is typically diagnosed based on the criterion of a drop in blood pressure greater than 20 mmHg in systolic or 10 mmHg in diastolic within 3 minutes of active standing or head-up tilt (Poon & Braun, 2005; Press *et al*., 2016). Ageing could be a risk factor due to the changes in vascular function, baroreflex sensitivity, body composition, and cardiovascular reserve that can occur during this period (Balapala *et al*., 2023). There is evidence from sub-Saharan Africa that age is related to changes in blood pressure after standing (Balapala *et al*., 2023).

Alcohol use is relevant when evaluating an elderly patient with postural symptoms because acute alcohol intake influences vascular tone and orthostatic tolerance; however, the degree and importance are determined by the amount and nature of alcohol consumption (Kalla & Figueredo, 2017; Narkiewicz *et al*., 2000). In the same manner, antihypertensive drugs need to be considered among symptomatic patients since drug burden and potentially causative drugs have been linked to orthostatic hypotension in older people (Poon & Braun, 2005; Press *et al*., 2016).

In this report, a 66 year old male is described who had severe symptomatic orthostatic hypotension while taking amlodipine. Importance of proper assessment of vital signs in a changing posture, medication evaluation, nursing intervention, health teaching, and fall precautions is emphasized.

Case Presentation

Patient Information

A 66-year-old male visited a health center in Zambia in September 2021 with complaints of dizziness, light-headedness, and fainting episodes mostly following standing up. The patient had experienced three episodes of syncope in the six months before presentation, together with headaches.

The patient had been suffering from essential hypertension for over 10 years and was on amlodipine 5 mg once a day for the past 10 years. The patient had poor compliance with his therapy. Because adherence was inconsistent, the extent of his drug exposure in the weeks before presentation is uncertain. A full drug history of the patient was obtained. The patient was not on any other antihypertensive medications, diuretics, sedatives, herbs, or any other drugs.

The patient drank beer on a regular basis with alcohol content of 5.5%, 2 bottles each with 500 ml per night for the last 5 years (approximately 43 g of ethanol per night), and his last drink was about 10 hours before presentation. He described symptoms such as poor appetite and acid reflux. He had no past medical conditions such as diabetes mellitus, renal disease, liver disease, heart disease, neurological disease, or any other chronic condition. He was a nonsmoker, nutritionally well-nourished, living with his family, independent, and had no family history of heart disease.

Clinical Findings

At presentation, the patient was conscious and oriented, but he looked physically weak. On general examination, the patient was well hydrated, his body weight was 60 kg, and body mass index was 20.7 kg/m^2. He had no pallor, dehydration, edema, jaundice, or any other general abnormality.

The postural vitals were taken with a properly calibrated sphygmomanometer with an appropriate size cuff after the patient lay down on the bed for 10 minutes. Blood pressure and heart rate were then measured after 3 minutes of active standing (Table 1).

Table 1: Patient's Hemodynamic Response to the Orthostatic Challenge

Posture / Parameter	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)	Heart Rate (bpm)	Clinical Status & Symptoms
Supine (Resting Baseline)	124	78	72	Asymptomatic; blood pressure within normal range
Standing (At 3 Minutes)	88	54	72	Orthostatic hypotension with dizziness, light-headedness, and mild ataxia
Net Postural Change	-36	-24	0	Blunted Baroreflex Response(Failure to reflexively increase heart rate to compensate for severe drop in BP)

The reduction from supine to 3-minute standing blood pressure was 36 mmHg systolic and 24 mmHg diastolic. This was greater than the conventional diagnostic threshold for orthostatic hypotension (Poon & Braun, 2005; Press *et al*., 2016). The heart rate remained 72 beats/minute during the observed measurements. This was documented as an absent observed compensatory heart-rate increase; it was not interpreted as conclusive evidence of baroreflex failure or autonomic dysfunction.

Table 2: Clinical Timeline

Date	Clinical event
August 2021	The patient developed dizziness, light-headedness, falls.
Sept 2021	He presented to the health facility for clinical assessment.
Sept 2021	Supine and standing vital signs were recorded, confirming marked orthostatic blood-pressure reduction (124/78 to 88/54 mmHg; heart rate unchanged at 72 bpm).
Sept 2021	Medication history, alcohol history, medical history, and focused physical examination were completed; other causes of syncope were assessed clinically.
Sept 2021	Amlodipine reduced from 5 mg to 2.5 mg once daily; hydration advice, fall-prevention measures, nursing monitoring, and patient and caregiver education started.
Oct 2021	Supportive care, nursing monitoring, fall-prevention measures, and education were initiated.
Nov 2021	Repeat postural observations and symptom reassessment were performed.
Dec 2021	Follow-up review and longer-term blood-pressure management were documented.

Diagnostic Assessment

The differential diagnosis of the patient's syncope and orthostatic symptoms included cardiac arrhythmia or structural heart disease, reflex (vasovagal) syncope, hypoglycemia, anemia or occult gastrointestinal blood loss (in view of his poor appetite and acid reflux), volume depletion, acute alcohol effect, and neurogenic orthostatic hypotension due to autonomic neuropathy (for example, diabetic or alcohol-related) or a neurodegenerative disorder.

Volume depletion was considered unlikely because the patient was clinically well hydrated, and acute alcohol intoxication was considered unlikely because he was conscious and oriented and his last drink had been about 10 hours earlier. Diabetes mellitus and cardiac, renal, hepatic, and neurological diseases were excluded by history. General examination showed no pallor, dehydration, edema, or jaundice. Laboratory and electrocardiographic results are not presented in this report, so cardiac, metabolic, and hematological causes could not be fully excluded. Orthostatic hypotension was diagnosed based on the measured fall in blood pressure (36/24 mmHg at 3 minutes of standing) together with reproduction of the patient's symptoms on standing.

Management

In September 2021, the dose of amlodipine was decreased by 2.5 mg following the patient's postural hypotension symptoms. The reason for doing so was to decrease the role of antihypertensive therapy in postural hypotension and observe the patient's symptoms and blood pressure, recognizing that aggressive blood-pressure lowering in older patients may predispose to hypotension, syncope, and falls (Rivasi *et al*., 2023). Treatment was given in terms of oral hydration, dietary advice, rest when symptomatic, gradual change in position, and monitoring of blood pressure, heart rate, and symptoms.

Nursing care provided by the health center personnel involved repeated monitoring of blood pressure, heart rate, symptoms, consciousness, and mobility of the patient. Orthostatic measurements were performed using the same method during repeated measurements. Fall prevention was done through assisted mobilization of the patient at home by relatives, asking for help before walking when symptomatic, creating a safe environment, and supervision during transfer when necessary.

Nursing care was organized using the nursing process. The nursing assessment covered postural blood pressure and heart rate, symptoms, level of consciousness, mobility, and fall risk. The nursing diagnoses were risk for falls, risk for injury related to orthostatic hypotension, and deficient knowledge about postural precautions, medication, and alcohol use. The interventions were the monitoring, fall-prevention, and education measures described in this section, with relatives involved as caregivers at home. Evaluation was based on repeat postural measurements, symptoms, falls, and adherence at each follow-up visit.

Patient education included instructions on gradual rising from bed to a seated position, staying hydrated as appropriate unless medically contraindicated, and sitting or lying down quickly if the person became dizzy. Patient education included information about reducing and stopping alcohol consumption as well as following up for evaluation of blood pressure and recurring symptoms. Nonsurgical interventions usually include removal or alteration of medications that could be contributing to symptoms, hydration, and reduction of alcohol exposure if appropriate.

Follow-Up and Outcome

At the first follow-up review three weeks after presentation (October 2021), the patient indicated improved symptoms concerning dizziness, pre-syncopal episodes, syncope, and falls. No symptoms were experienced with normal activities, and there were no more falls noted. The patient's hypertension medication following his visit at the health center included Amlodipine, 2.5 mg, daily. Blood pressure, heart rate, postural symptoms, and compliance were monitored. The patient was educated on symptom monitoring, safety positioning, reduction in alcohol intake, and to urgently seek medical care if he had recurrent syncopal attacks, falls, chest pain, palpitations, or neurological symptoms.

Ethical approval

This case report is linked to the study “Blood Pressure Variations Associated with Aging”. The study protocol was approved by the Tropical Diseases Research Centre (TDRC) Ethics Review Committee, Ndola, Zambia with IRB Registration No. 00002911; FWA No. 00003729; Ref. TRC/C4/07/2021 on 14th September 2021, with approval valid from 14 September 2021 to 14 September 2022. Final authorization was granted by the National Health Research Authority (NHRA), Zambia, on 29th September 2021.

Discussion

This case describes symptomatic orthostatic hypotension in an elderly male with longstanding hypertension who was on amlodipine therapy and who was noted to consume alcohol regularly. The drop in his blood pressure while standing was substantial and exceeded the threshold used to define orthostatic hypotension (Poon & Braun, 2005; Press *et al*., 2016). His symptoms of dizziness and fainting were also indicative of orthostatic intolerance.

Age is the essential clinical setting. As indicated by Balapala *et al*. (2023), variation in blood pressure with standing is seen among older patients in sub-Saharan Africa. They found an association between age and the reduction in diastolic blood pressure after standing. This is relevant in the sense that postural blood pressure should be measured in older individuals, even when their blood pressure at rest seems normal.

Consideration was made in clinical review to amlodipine and alcohol use, although neither is known to be the definitive cause of the orthostatic hypotension. The patient had taken amlodipine for about 10 years before his symptoms began, with inconsistent adherence, so a clear temporal relationship between the drug and the symptoms cannot be established. Nevertheless, exposure to medications might be a factor in older patients who have orthostatic symptoms (Poon & Braun, 2005; Gaxatte *et al*., 2017). Similarly, reduced orthostatic tolerance due to alcohol use has been found in research in both physiological and observational studies, but these findings cannot establish causation in an individual patient (Kalla & Figueredo, 2017; Narkiewicz *et al*., 2000).

The absence of any heart-rate increase on standing is clinically relevant. In neurogenic orthostatic hypotension the compensatory heart-rate rise is blunted, and a ratio of heart-rate increase to systolic blood-pressure fall (ΔHR/ΔSBP) below 0.5 bpm/mmHg has been proposed as a marker of a neurogenic cause (Norcliffe-Kaufmann *et al*., 2018). In this patient the ratio was 0 bpm/mmHg (0/36). Amlodipine has no direct negative chronotropic effect, so the absent heart-rate response raises the possibility of an additional autonomic contribution, for example, alcohol-related autonomic neuropathy. No formal autonomic function testing is reported, so this possibility could not be confirmed or excluded.

The contribution of nursing care was crucial for patient safety and assessment. Community health center nurses can observe posture-related symptoms, perform and document standardized assessments related to orthostatic hypotension, recognize fall risk, supervise mobilization of patients, reinforce advice regarding medications and hydration, and educate patients and their caregivers about signs. It is especially important that supine blood pressure may not reveal postural hypotension. Nurses can also use the teach-back method to confirm that patients and caregivers have understood postural precautions and should include family caregivers in education when relatives supervise mobilization at home, as in this case.

Limitations

This report has several limitations. It describes a single patient, so the findings cannot be generalized. The dose reduction, hydration advice, alcohol counseling, and fall-prevention measures were introduced together, so the improvement cannot be attributed to any single intervention, and no rechallenge was undertaken. Alcohol intake and medication adherence were self-reported. Follow-up was limited to about three months. Laboratory, electrocardiographic, echocardiographic, and autonomic function test results, and the numerical blood-pressure values at follow-up, are not presented in this report; cardiac, metabolic, and neurogenic contributions therefore could not be fully excluded, and the response to treatment is described clinically rather than numerically.

Future Scope

Prospective studies in the future should look into the prevalence, risk factors, and effects of orthostatic hypotension in elderly patients on anti-hypertensive drugs in sub-Saharan Africa. Further, there is need for evaluation of whether orthostatic blood pressure checks and other interventions like hydration management done by nurses improve symptoms and reduce instances of syncope and falls.

Conclusion

Orthostatic hypotension was recorded in this 66-year-old male even though his blood pressure was normal when he was in the supine position. Amlodipine and regular alcohol use were possible contributing factors, but neither was proven to be the cause. This case is yet another reminder of the importance of checking the lying and standing blood pressure of an elderly patient with symptoms such as dizziness, fainting, or falling. Some of the important management steps include medication assessment, fall prevention, education, and follow-up.

CRediT Authorship Contribution Statement

K.R.B.: Designed the case report, collected and organized the clinical data, prepared the manuscript and revised.

AI Assistance Declaration

None of the technologies assisted by artificial intelligence have been used in the process of writing this manuscript.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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