Letter to the Editor

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Orthostatic hypotension, an often-neglected problem in community-dwelling older people: discrepancies between studies and real life

Sarah Damanti[1, 2, *], Dario Consonni[3], Annalisa Valentini[4], Benedetta Cerasoli[4], Martina Biotto[4], Federica Conti[4], Marta Clerici[4], Pasqualina Iannuzzi[4], Emanuela Manzo[4], Paolo D Rossi[1], Simona Ciccone[1], Matteo Cesari[1, 2]

[1]Geriatric Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
[2]Department of Clinical and Community Sciences, University of Milan, Milan, Italy
[3]Unit of Epidemiology, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
[4]Fellowship in Geriatrics and Gerontology, University of Milan, Milan, Italy

Orthostatic hypotension (OH) is a common condition in older persons. According to the 2011 criteria, OH is defined by a sustained reduction of systolic blood pressure of 20 mmHg or a 10 mmHg-fall of diastolic blood pressure.[1] Its prevalence increases with age and according to a recent systematic review the pooled prevalence in community dwelling older people is 22.2%.[2] Although OH is largely explained by concurrent clinical conditions (in particular, hypertension, diabetes, malnutrition, vascular encephalopathy, anemia, Parkinson's disease)[3], aging per se determines a series of physiological dysfunctions potentially representing its biological substratum (e.g., reduction in baroreflex-mediated cardiovascular function, altered salt and water balance at renal level, impaired cardiac diastolic filling). It is also noteworthy that age-related changes in pharmacokinetic and pharmacodynamic mechanisms of drugs (especially in the context of polypharmacy) also increase the risk of OH.

OH is often asymptomatic. Therefore, the individual may remain unaware of OH until a certain stressor suddenly exposes it (frequently causing major health consequences for the person, such as falls and traumatic injuries).

Even if research studies exist to evaluate the prevalence of OH in community-dwelling people, to the best of our knowledge the prevalence of diagnosed OH in routine clinical practice in an outpatient setting has never been evaluated so far. Our aim was to measure it and compare it to what reported by studies conducted for research purpose.

It was conducted a retrospective analysis of outpatients consequently afferent to a tertiary hospital in Milan for memory complaints, functional evaluations or comprehensive geriatric assessments during the years 2011-2014. Ethical approval was not required for this study in accordance with the institutional guidelines.

The following variables characterizing the patients were retrieved from medical charts: age, gender, Mini Mental State Examination (MMSE), Activity of Daily Living (ADL), Instrumental ADL (IADL), Performance Oriented Mobility Assessment (POMA), symptoms possibly related to OH (*i.e.*, dizziness, light-headedness, weakness, nausea, paracervical pain, confusion, speech alterations, visual impairment), comorbidities associated with OH (*i.e.*, vomit, diarrhea, fluid restriction, other causes of dehydration, anemia, aortic stenosis, bradyarrhythmia, hypertension, diabetes, chronic kidney disease, heart failure, Parkinson's disease, Lewy's bodies dementia, amyloidosis, neoplasia, potus, cobalamin deficit, multinfartual encephalopathy, immobility), and drugs potentially causing OH (*i.e.*, diuretics, sympatholytic agents, vasodilators, antidepressants, antihypertensive medications, anti-Parkinson's disease drugs). Patients were divided into three groups: with OH, not diagnosed with OH but reporting suggestive symptoms, not diagnosed with OH and with no symptoms.

Shapiro Wilk test was used to assess the distribution of the variables. Categorical variables were compared with Fisher exact test and quantitative variables with Kruskal-Wallis test. Statistical analyses were performed with Stata 15 (StataCorp. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP. 2017).

Correspondence to: Email: sarah.damanti@hotmail.it

Among the 465 patients, only 14 (3%) were diagnosed

Table 1.   Main characteristics of the population.

	OH diagnosis	Not OH diagnosis		P
		Symptomatic	Asymptomatic	
Number of patients	14	164	287	
Age, median (IQR)	83.5 (82–85)	82 (77–85.5)	81 (77–87)	0.34
Gender male	4 (28.6%)	56 (34.1%)	93 (32.4%)	0.89
MMSE, median (IQR)	26 (23–27)	25 (22–28)	26 (21–28)	0.96
ADL, median (IQR)	5 (4–5)	4 (3–5)	5 (3–6)	0.21
IADL, median (IQR)	5.5 (3.5–7)	3 (1–6)	3 (1–6)	0.2
POMA, median (IQR)	20 (8–22)	13 (10–17)	16 (11–23)	0.001
Symptoms				
dizziness	3 (21.4%)	41 (25.1%)	0 (0%)	N.A.
lightheadness	1 (7.1%)	14 (8.6%)	0 (0%)	N.A.
weakness	3 (21.4%)	72 (44.2%)	0 (0%)	N.A.
nausea	0 (0%)	5 (3.1%)	0 (0%)	N.A.
paracervical pain	0 (0%)	22 (13.5%)	0 (0%)	N.A.
confusion	4 (28.6%)	37 (22.7%)	0 (0%)	N.A.
speech alterations	1 (7.1%)	26 (16%)	0 (0%)	N.A.
visual impairment	1 (7.1%)	21 (12.9%)	0 (0%)	N.A.
Comorbidies				
vomit	0 (0%)	6 (3.7%)	2 (0.9%)	0.15
diarrhea	0 (0%)	3 (1.8%)	2 (0.9%)	0.71
fluid restriction	1 (7.1%)	2 (1.2%)	0 (0%)	*0.02*
other causes of dehydration	0 (0%)	2 (1.2%)	0 (0%)	0.24
anemia	4 (36.4%)	34 (26%)	37 (19.8%)	0.25
aortic stenosis	0 (0%)	8 (5.5%)	24 (8.7%)	0.4
bradyarrhythmia	2 (14.3%)	17 (10.6%)	26 (9.1%)	0.63
hypertension	6 (42.9%)	131 (79.9%)	202 (70.4%)	0.004
diabetes	2 (14.3%)	26 (15.8%)	54 (18.8%)	0.75
CKD	2 (14.3%)	21 (14.1%)	42 (15.2%)	0.97
cardiac insufficiency	2 (14.3%)	24 (15%)	49 (17.2%)	0.88
Parkinson disease	0 (0%)	3 (1.8%)	11 (3.8%)	0.53
Lewy bodies dementia	0 (0%)	2 (1.2%)	1 (0.3%)	0.36
amyloidosis	0 (0%)	0 (0%)	1 (0.35%)	1
neoplasia	2 (14.3%)	27 (16.5%)	58 (20.2%)	0.63
potus	3 (25%)	41 (33.1%)	47 (19.1%)	0.01
cobalamin deficit	0 (0%)	9 (15.8%)	15 (9.1%)	0.2
multinfartual encephalopathy	5 (38.5%)	49 (35.2%)	95 (37.5%)	0.89
immobility	0 (0%)	3 (1.9%)	3 (1.1%)	0.73
Drugs				
number of drugs, median (IQR)	5 (3–6)	6 (3–7)	6 (3–8)	0.57
diuretics	5 (35.7%)	66 (40.5%)	115 (40.5%)	0.97
sympatholytic	6 (42.9%)	48 (29.5%)	116 (41%)	0.04
vasodilators	4 (28.6%)	41 (25.1%)	71 (25%)	0.94
antidepressants	5 (35.7%)	36 (21.9%)	60 (21.1%)	0.42
antihypertensive	8 (57.1%)	107 (65.6%)	175 (62.1%)	0.66
antiparkinson	1 (7.1%)	4 (2.4%)	9 (3.2%)	0.39

ADL: Activity of Daily Living; CKD: chronic kidney disease; IADL: Instrumental ADL; IQR: inter quartile range; MMSE: Mini Mental State Examination;

POMA: Performance Oriented Mobility Assessment.

with OH. Overall the sample was old (mean age 81.3 ± 6.8), with a greater prevalence of female (314, 66.4%), without significant cognitive impairment (mean MMSE 24 ± 5), with a moderate functional decline (mean ADL 4 ± 1.8, mean IADL 3.7 ± 2.6), with an elevated risk of falling (mean POMA 15.2 ± 6.9) and polypharmacy (5.8 ± 3.3).

Table 1 illustrates the main characteristics of the three groups.. Amidst people not diagnosed with OH 164 persons complained about symptoms potentially suggestive of it and were more likely to present potus, hypertension, and poor POMA results than the asymptomatic ones (all $P < 0.05$).

The prevalence of OH found in our sample (3%) is substantially lower than what reported in literature (22.2%). Considering the main characteristics of the patients it is difficult to think that OH prevalence could really be so low. Indeed, the prevalence of OH tends to increase with age,[4] chronic diseases[5] and polypharmacy.[6] It is true that the lack of procedural consistency in measuring OH could partially explain the low detected prevalence. The take-over could have been influenced by the incorrect position of the sphygmomanometer, the use of electronical devices, the variable level of orthostatic stress and the different time of lying down and standing before orthostatic measurements were obtained. This last point is particularly critical since the current guidelines[1] lack the explicit timing information needed to define a sustained OH response, thus causing an extreme variability in OH measurements also in clinical studies. Moreover, OH is affected by diurnal variation and is less detectable in the afternoon.

Our study suggests that OH is seldom sought in clinical practice, even if guidelines recommend the screening of postural variations of blood pressure in older people regardless the presence of postural symptoms.[7] This malpractice can lead to adverse and expensive consequences.

OH has been linked to increased mortality, cardiovascular diseases, cognitive impairment, falls and hospitalizations;[8] its detection could reduce the chance of inappropriate selection of the drug classes for older patients and therefore it assumes paramount importance under a public health perspective since OH consequences can rise the health care expenditure and significantly impact the life quality of older people.[9,10]

Unfortunately, the presence of multiple co-morbid conditions and the non-specificity of signs and symptoms make the OH identification quite challenging. It is necessary to promote its detection by simply adhering to the gold standard recommendations for the blood pressure measurement in the clinical setting.[7]

Exploiting a non-invasive procedure to assess postural variation of blood pressure should be supposed to be part of the normal routine. The lack of time frequently complained by physicians in performing the screening for OH, is not an excuse.

On the other hand, public health authorities should start considering that the proper management of older persons cannot be compressed in the fewer and fewer minutes of evaluation conducted in the busy outpatient clinics.

Acknowledgment

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