



Orthostatic hypotension among elderly patients in Italian internal medicine wards: an observational study: comment

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We really appreciated the recently published paper by Pasina et al. [1], demonstrating a high prevalence of orthostatic hypotension (OH) among internal medicine inpatients, which was not associated with an increased 6-month mortality. We previously reported similar findings in a sample of consecutive inpatients aged ≥ 65 years admitted in an acute geriatric ward (AGW) at the tertiary hospital Molinette, Turin, Italy [2]. For each patient, demographic and clinical variables, number of medications and main drug categories, alongside a Comprehensive Geriatric Assessment (CGA) including indices of comorbidity and global physical health (Cumulative Illness Rating Scale, CIRS), cognitive status (Short Portable Mental Status Questionnaire, SPMSQ), functional autonomy (Activities of Daily Living, ADL, and Instrumental Activities of Daily Living, IADL), and mobility (Timed Up and Go test) were carefully assessed. During the 3-month study period, 343 patients were admitted to the AGW: 148 patients were excluded at admission (118 because of inability to stand or keeping upright position, 26 terminally ill, and 4 with advanced dementia), leaving a final sample of 195 subjects (101 women, mean age 80.1 ± 7.2 years). Prevalence of OH at entry was 52.3%. At discharge the OH test could not be performed in 73 subjects (55 could no more stand or keep the upright position on their own, 6 were transferred to other wards, 6 were deceased and 10 were not cooperating) and among the remaining 122 patients, prevalence of OH was 49%. Interestingly, only 44 subjects showed OH both at admission and at discharge; 16 patients presented OH only at admission while 18 patients at discharge only. Among all the clinical and CGA variables considered, a history of coronary artery disease and of

neurological disease were the only ones weakly, still independently associated with OH after multivariate adjustment ($p=0.02$ and $p=0.03$, respectively). There was no difference in the incidence of syncope, falls, post-traumatic fractures, length of stay and mortality during hospital stay and at 6 months after discharge among patients with and without OH [2].

Both our study and that of Pasina et al. [1] showed that OH is common in older medical inpatients. Still, neither study was able to recognize any factor significantly and consistently associated with the presence of OH, including polypharmacy or specific medication classes. Moreover, both studies clearly showed that in hospitalized older subjects OH is more likely to be an inconsistent and fluctuating physical finding rather than a persistent condition. Indeed, several physio-pathological factors and therapeutic measures can contribute to the appearance and disappearance of OH in acutely ill older patients during hospital stay: beyond the well-documented detrimental effects of prolonged bed rest, many causes of low circulating volume such as arrhythmia, myocardial infarction, acute heart failure, dehydration, diarrhea, vomiting, fever and hemorrhage can foster OH development. On the other side, the resolution of the acute phase, fluid volume expansion and a careful revision of medical therapies can lead to a restoration of the normal circulating volume with a more efficient compensatory response to standing. This complex interplay between evolving pathophysiological conditions and therapeutic variations makes it extremely hard to analyze the potential impact of medical therapies on OH.

Results from our study [2] and from Pasina et al. [1] are in keeping with those of Weiss et al. [3], supporting the hypothesis that OH is not a consistent finding in older hospitalized patients [3]. Moreover, other studies have shown that OH is often an inconsistent finding also in older outpatients. Ward et al. [4] have monitored OH up to 2 min after standing in a sample of 40 outpatients referred for syncope, fall or postural symptoms: on subsequent occasions in the

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morning, OH was confirmed only in 67.5% of the subjects. Similarly, in an Italian study including 3858 subjects randomly recruited by General Practitioners, OH was confirmed on a second visit 7 days after the initial diagnosis in 36.5% and in 25.7% of cases when considering systolic OH and both systolic and diastolic OH, respectively [5].

Furthermore, the study of Pasina et al., in keeping with our study, did not document a significantly increased risk of death or other adverse events after discharge in patients with OH [1, 2]. On this background, there are persistent uncertainties about the clinical implications of detecting OH in older inpatients; still, according to the current European guidelines on hypertension and on the diagnosis and management of syncope, a careful assessment of blood pressure after standing remains a fundamental good clinical practice with geriatric patients.

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Compliance with ethical standards

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References

1. Pasina L, Casati M, Cortesi L, Tettamanti M, Pellegrini R, Oppedisano I, Dugnani N, Marinou A, Riario Sforza GG, Brucato A (2020) Orthostatic hypotension among elderly patients in Italian internal medicine wards: an observational study. *Intern Emerg Med* 15:281–287. <https://doi.org/10.1007/s11739-019-02172-7>
2. Tibaldi M, Brescianini A, Sciarrillo I, Massaia M, Bo M (2014) Prevalence and clinical implications of orthostatic hypotension in elderly inpatients. *J Hypertens Open Access* 3:4. <https://doi.org/10.4172/2167-1095.1000155>
3. Weiss A, Grossman E, Beloosesky Y, Grinblat J (2002) Orthostatic hypotension in acute geriatric ward: is it a consistent finding? *Arch Intern Med* 162:2369–2374. <https://doi.org/10.1001/archinte.162.20.2369>
4. Ward C, Kenny RA (1996) Reproducibility of orthostatic hypotension in symptomatic elderly. *Am J Med* 100:418–422. [https://doi.org/10.1016/S0002-9343\(97\)89517-4](https://doi.org/10.1016/S0002-9343(97)89517-4)
5. Alli C, Avanzini F, Bettelli G, Colombo F, Corso R et al (1992) Prevalence and variability of orthostatic hypotension in the elderly. Results of the 'Italian study on blood pressure in the elderly (SPAA)'. The 'Gruppo di Studio Sulla Pressione Arteriosa nell'Anziano'. *EurHeart J* 13:178–182. <https://doi.org/10.1093/oxfordjournals.eurheartj.a060143>

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