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LETTER TO THE EDITOR

Early postural blood pressure response and cause-specific mortality among middle-aged adults: what is the role of diastolic blood pressure?

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Dear Editor,

With interest we have read the article by Fedorowski et al. [1], which provides valuable information about cause-specific mortality in middle-aged subjects with orthostatic hypotension. In their study orthostatic hypotension (defined as a decrease in systolic blood pressure $\geq$20 mmHg and/or decrease in diastolic blood pressure $\geq$10 mmHg within 3 min of standing) was associated with mortality through injuries and neurologic diseases. Our major comment is that the article lacks data on the postural diastolic pressure response, both in describing the whole group with orthostatic hypotension, and the analyses of all cause and cause-specific mortality.

Surprisingly, orthostatic hypotension and postural systolic blood pressure decline was not associated with cardiovascular mortality, although there was such an association in a smaller rescreened subsample. In other studies orthostatic hypotension was associated with myocardial infarction in middle-aged adults [2] and home dwelling elderly [3]. Unfortunately Fedorowski et al. [1] did not study the influence of postural diastolic blood pressure decline on cause-specific mortality. There might be a crucial role of diastolic blood flow on myocardial perfusion and subsequently myocardial infarction and cardiovascular mortality [3]. Postural diastolic, but not systolic blood pressure decline, seems to be associated with an increased risk of myocardial infarction [3]. Moreover in the same study population of the Malmö Preventive Project already the association was found that postural diastolic, but not systolic blood pressure decline predicts coronary events [4].

In conclusion, Fedorowski et al. [1] added very valuable information to the current knowledge of orthostatic hypotension through information on cause-specific mortality. However we miss in their study specific data on cause-specific mortality in relation to postural diastolic blood pressure decline and especially regarding cardiovascular mortality.

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Table 1 Association between quartiles of diastolic blood pressure response (ΔDBP), all-cause and cardiovascular mortality among 32,068 participants of the Malmö Preventive Project

Causes of death	Quartiles of ΔDBP (mmHg)*			
Hazard ratio [95% CI]	$Q1^{\dagger}_{DBP}$ +11.4 ± 3.2 n = 4,718 (*p* linear trend)	$Q2_{DBP}$ +5.0 ± 0.1 n = 8,768	$Q3_{DBP}$ 0.0 ± 0.0 n = 14,207	$Q4_{DBP}$ −6.1 ± 2.7 n = 4,375
All causes				
Model 1	1.00	1.06	1.07	1.20
	<0.001	[0.98–1.15]	[0.99–1.15]	[1.10–1.31]
Model 2	1.00	1.03	1.02	1.09
	0.13	[0.96–1.12]	[0.95–1.10]	[1.00–1.19]
CV disease only				
Model 1	1.00	1.09	1.04	1.37
	<0.001	[0.98–1.22]	[0.93–1.16]	[1.23–1.53]
Model 2	1.00	0.97	1.00	1.12
	0.11	[0.86–1.11]	[0.89–1.12]	[0.97–1.28]

* Mean ± standard deviation; † reference quartile; *Model 1*, adjusted for age and gender; *Model 2*, adjusted for age, gender, body-mass index, supine systolic blood pressure, antihypertensive treatment, diabetes, current smoking and total cholesterol

The Authors' Reply

Lagro and et al. commenting upon our article wonder why diastolic blood pressure response was not analyzed in this study. As a matter of fact, we did perform and include these analyses in the initial version of the submitted manuscript. However, as the association between postural diastolic change and cause-specific mortality (including cardiovascular death) did not substantially differ from that for systolic change, and thus did not alter our conclusions, we were advised to omit these results. As can be seen in Table 1, ΔDBP wasn't a better predictor of cardiovascular (CV) death than ΔSBP.

In our previous article cited by Lagro and et al. [1], we observed that younger individuals (<42 years) with orthostatic hypotension (OH) had higher mortality than older ones (>48 years) but the latter had in contrast higher risk of incident coronary event. It would explain why in the rescreened (and naturally older) subset of MPP a significant association between CV death and OH or hypotensive SBP response was found. Probably, the reduced time to CV event among older adults accentuates the relationship between prevalent orthostatic impairment and progression of CV disease, whereas among younger individuals other concomitant CV risk factors (such as smoking, hypertension or diabetes) have a more prominent role. Moreover, in the rescreened subset of MPP, orthostatic hypotension defined as SBP drop ≥20 mmHg alone was the best predictor of mortality and CV events [2]. Thus, we believe that the role of OH as a CV risk factor increases with advancing age, and that ΔSBP alone may be used as a reliable marker of postural haemodynamic homeostasis.

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