

SYNCOPE IPOTENSIVE: DIAGNOSI E TERAPIA

Ipotensione post-prandiale

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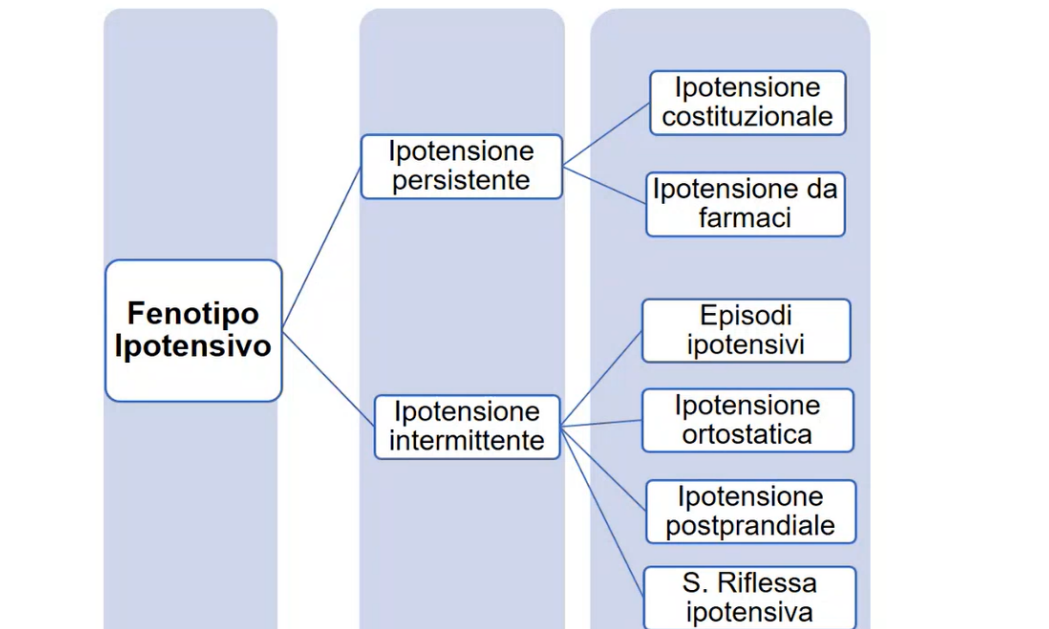


Classification of syncope

Reflex (neurally mediated) syncope Vasovagal: - orthostatic VVS: standing, less common sitting - emotional: fear, pain (somatic or visceral), instrumentation, blood phobia Situational: - micturition - gastrointestinal stimulation (swallow, defaecation) - cough, sneeze - post-exercise - others (e.g. laughing, brass instrument playing) Carotid sinus syndrome Non-classical forms (without prodromes and/or without apparent triggers and/or atypical presentation)
Syncope due to OH <i>Note that hypotension may be exacerbated by venous pooling during exercise (exercise-induced after meals (postprandial hypotension) and after prolonged bed rest (deconditioning).</i> Drug-induced OH (most common cause of OH): - e.g. vasodilators, diuretics, phenothiazine, antidepressants Volume depletion: - haemorrhage, diarrhoea, vomiting, etc. Primary autonomic failure (neurogenic OH): - pure autonomic failure, multiple system atrophy, Parkinson's disease, dementia with Lewy bodies Secondary autonomic failure (neurogenic OH): - diabetes, amyloidosis, spinal cord injuries, auto-immune autonomic neuropathy, paraneoplastic autonomic neuropathy, kidney failure



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Postprandial hypotension is a health condition characterised by a meal-related reduction in blood pressure (BP)

According to a meta-analysis, PPH has been reported in 40.5% of older adults, with the prevalence varying by setting:

- 32.8% in community-dwelling individuals
- 39.4% in long-term care facilities
- 49.3% in hospital geriatrics departments

L. Huang, S. Li, X. Xie, et al., "Prevalence of Postprandial Hypotension in Older Adults: A Systematic Review and Meta-Analysis," *Age and Ageing* **53** (2024): 1–9.



PPH occurs frequently in the general adult population



ESC

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<https://doi.org/10.1093/eurjpc/zwaf217>

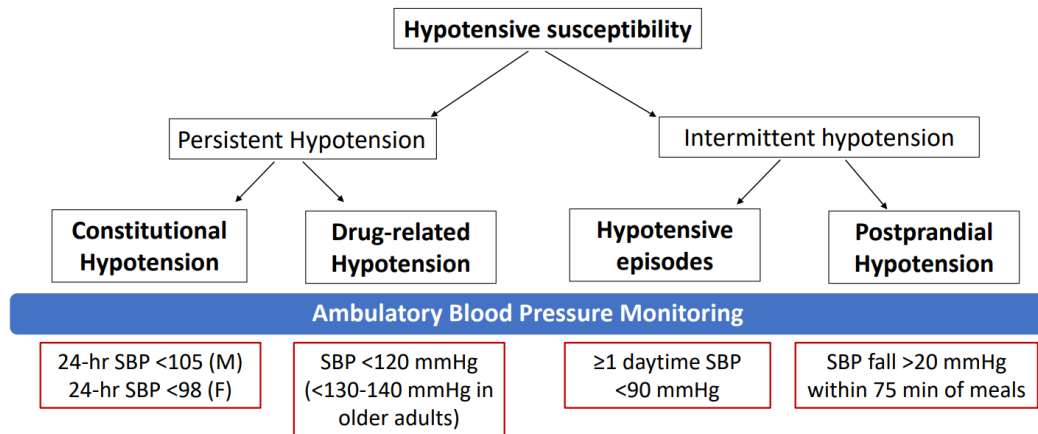
- In a 75 g glucose-loading study, **19.9% of the general population** exhibited a PPH

Patients with autonomic dysfunction showed a significantly higher prevalence than healthy controls

L. Huang, S. Li, X. Xie, et al., "Prevalence of Postprandial Hypotension in Older Adults: A Systematic Review and Meta-Analysis," *Age and Ageing* **53** (2024): 1–9.



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Brignole M, et al. Expert Review of Medical Devices 2023



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Table 1 Hypotensive phenotype: diagnostic criteria (modified from Brignole et al.³)

Diagnosis	Definition	Test	Blood pressure cut-offs
Constitutional hypotension	Persistently low BP in the absence of hypotensive medications, independent of triggering events	Office BP 24-h ABPM	Persistent SBP <110 mmHg (males) or <100 mmHg (females) <i>Males</i> 24 h SBP <105 mmHg Daytime SBP <115 mmHg Nighttime SBP <97 mmHg <i>Females</i> 24 h SBP <98 mmHg Daytime SBP <105 mmHg Nighttime SBP <92 mmHg
Drug-related persistent hypotension	SBP values persistently below the recommended target in patients receiving hypotensive medications	Office BP 24-h ABPM	Age <65: persistent SBP <120 mmHg Age ≥65: persistent SBP <130 mmHg 24 h SBP <120 mmHg
Hypotensive (intermittent) episodes	Orthostatic hypotension	Office BP and tilt testing	Symptomatic SBP fall ≥20 mmHg or standing SBP <90 mmHg within 3 min of active standing during the initial evaluation or during passive standing while performing SCAFA. This latter includes both the classical form (during the first 3 min of the test) and the delayed form (onset after 3 min of the test) ^a
	Post-prandial hypotension	24-h ABPM	Symptomatic SBP fall >20 mmHg within 75 min of eating meals, compared to the mean of the last three BP measurements before the meal
	Hypotensive drops	24-h ABPM	≥1 episode of daytime SBP <90 mmHg ≥2 episodes of daytime SBP <100 mmHg
Hypotensive reflex syncope	(1) Induction of syncope during tilt testing	Tilt testing	Typical haemodynamic pattern of mixed or vasodepressor vasovagal syncope with hypotension and bradycardia but without asystolic pauses >3 s
	(2) Reproduction of (pre)syncope during carotid sinus massage (method of symptoms)	Carotid sinus massage	Reproduction of spontaneous (pre)syncope, recognized by the patient itself, with fall in SBP >50 mmHg or below 85 mmHg ^b and the absence of asystolic pause/s >3 s

ABPM, ambulatory blood pressure monitoring; BP, blood pressure; DBP, diastolic blood pressure; SBP, systolic blood pressure.

^aSee Fedorowski et al.⁵ and Torabi et al.⁶

^bSee Solari et al.⁷



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Diagnostic BP drop (≥ 20 mm Hg drop in systolic blood pressure) can usually be recognized **as soon as 15 minutes after eating in 15%** of PPH patient can be detected in about **70% of patients at 30-60 minutes**, postprandially



Abbas R, Tanguy A, Bonnet-Zamponi D, Djedid R, Lounis A, Gaubert-Dahan ML: New simplified screening method for postprandial hypotension in older people. *J Frailty Aging*. 2018, 7:28-33. [10.14283/jfa.2018.2](https://doi.org/10.14283/jfa.2018.2)



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Many patients may be asymptomatic, the most common signs and symptoms of

PPH include:

Motor weakness, dizziness, light-headedness, syncope, falls, angina pectoris,

nausea, and visual disturbances such as black spots in the visual field

("floaters"). Patients may also be unable to walk or stand after meal

consumption

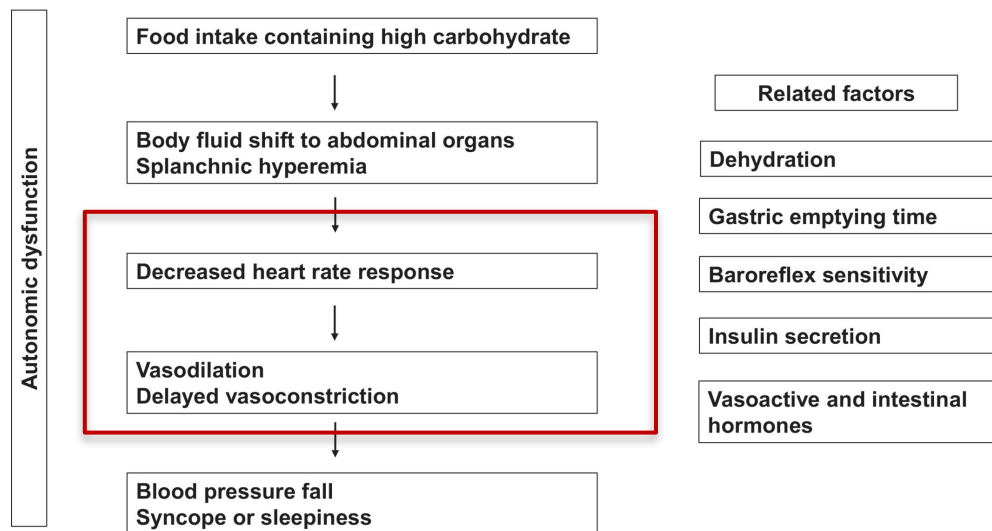


Van Orshoven NP, Jansen PA, Oudejans I, Schoon Y, Oey PL: Postprandial hypotension in clinical geriatric patients and healthy elderly: prevalence related to patient selection and diagnostic criteria. J Aging Res. 2010, 2010:243752.



Postprandial Hypotension: An Underreported Silent Killer in the Aged

Ayoola Awosika^{1,2}, Uzochukwu Adabanya³, Richard M. Millis⁴, Adekunle E. Omole⁵, Jin Hyung Moon⁶



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	Young Healthy	Elderly Healthy	Autonomic Failure (PPH)
Heart rate	↑	↑	↑↑
Blood pressure	↔	↔ or ↓	↓↓
Plasma norepinephrine	↔	↑	↔
Vascular norepinephrine responsiveness	↑	↔ or ↓	↓↓

TABLE 2: Age-dependent physiologic and pathophysiologic postprandial responses



High-carbohydrate meals influence the magnitude, duration, and symptoms of PPH

Oral glucose and the subsequent insulin release primarily cause the BP effects of CHs. Other CHs, such as oral fructose, oral xylose, and intravenous glucose, do not or only minimally affect BP

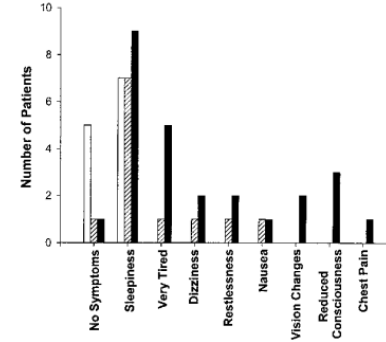


Figure 2. Meal-induced symptoms in 12 geriatric patients with postprandial hypotension after ingestion of standardized liquid meals with low- (□), normal- (▨), and high- (■) carbohydrate contents. Data columns present the number of patients with symptoms.



Review

Potential for Gut Peptide-Based Therapy in Postprandial Hypotension

Malcolm J. Borg¹, Cong Xie¹, Christopher K. Rayner¹, Michael Horowitz^{1,2}, Karen L. Jones^{1,2} and Tongzhi Wu^{1,2,*}

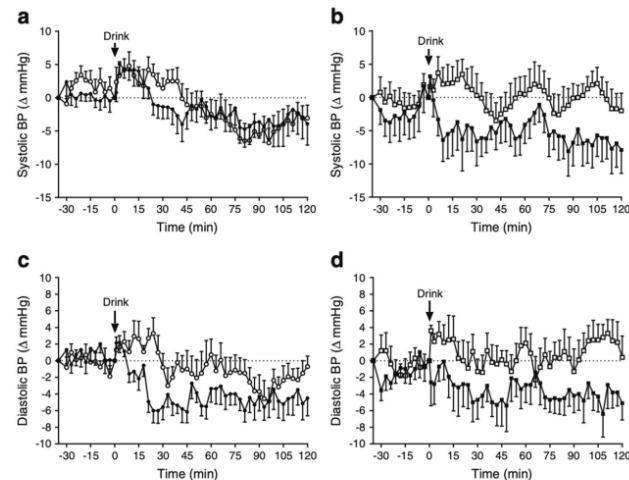
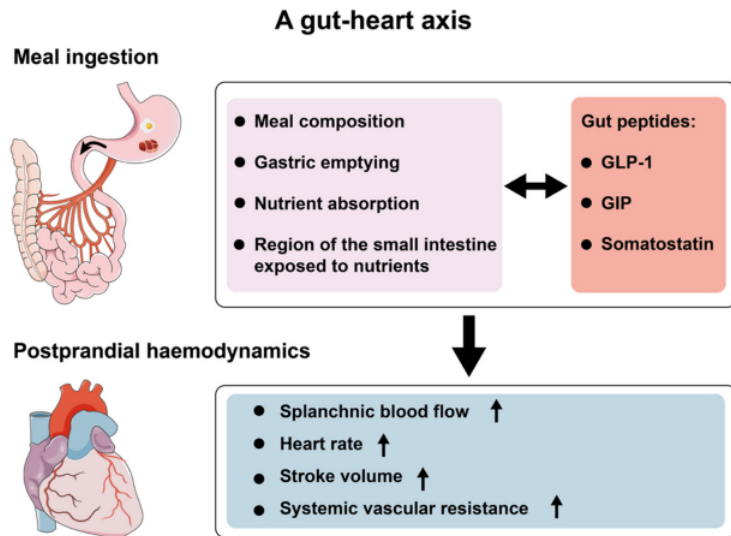


Figure 2. Effect of intravenous GLP-1 (0.9 pmol/kg/min; open symbols) vs saline (filled symbols) on SBP and DBP before and after 75 g oral glucose in “healthy” older ($n = 14$; (a,c)) and T2D ($n = 10$; (b,d)) subjects. Data are mean values $\pm$ standard error of the mean. Intravenous GLP-1 increased DBP in “healthy” older subjects ($p < 0.001$), and SBP and DBP in T2D subjects ($p < 0.05$ for both), postprandially [7].



Lifestyle modification is the
cornerstone of PPH management.

Category	Intervention/strategy	Details/notes
Lifestyle modifications	Water intake [41]	500 mL before meals reduces PPH in older adults
	Meal adjustment [11, 16, 22]	Smaller, low-carb meals; increased meal frequency
	Postmeal walking [42]	Mild aerobic walking ~10 min, starting 20 min after meals; improves BP, but the effect is not sustained after stopping



Pre-meal water ingestion may attenuate the postprandial fall in blood pressure in older adults, possibly through volume-dependent gastric distension and sympathetic activation.

However, the observed effect appears modest, with an attenuation of systolic BP decline of approximately 3 mmHg, and its clinical relevance in symptomatic patients remains uncertain

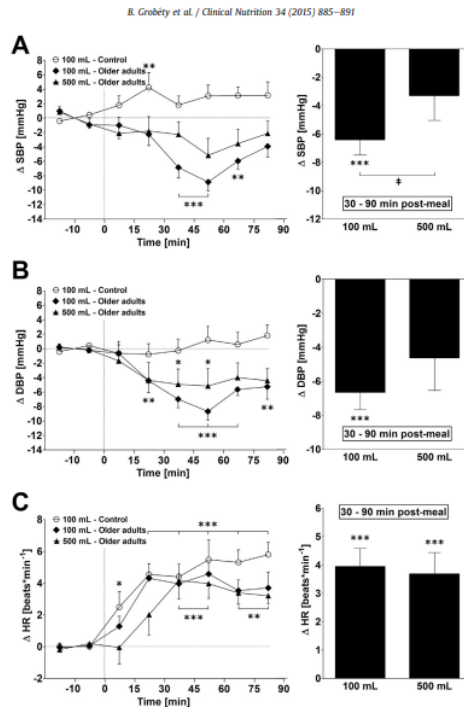


Fig. 1. Left panel: Time course of the changes of systolic blood pressure (SBP) (A), diastolic blood pressure (DBP) (B) and heart rate (HR) (C) in young controls (open circle ○) and older adults drinking either 100 mL (closed rhomb ◆) or 500 mL (closed triangle ▲) water preceding a meal. Right panel: Mean responses in older adults averaged from 30 to 90 min postprandial relative to baseline values and presented as a delta (i.e. average from 30 to 90 min postprandial, minus the average over the 20 min baseline period). Time 0 indicates 15 min after ingestion of meal and drinks. **P* < 0.05, ***P* < 0.01 and ****P* < 0.005 statistically significant differences over time from baseline values (left and right panel). **P* < 0.05, statistically significant difference between responses to the drinks (right panel).

B. Grob  , E. K. Grasser, G. Yepuri, A. G. Dulloo, and J. P. Mon-tani, "Postprandial Hypotension in Older Adults: Can It Be Prevented by Drinking Water Before the Meal?," *Clinical Nutrition* 34 (2015):885–891.



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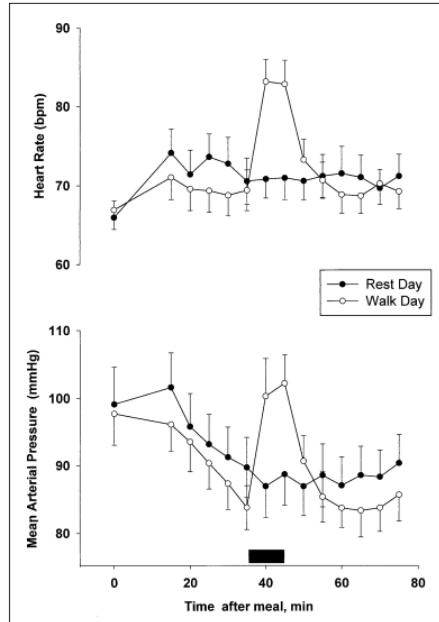


FIGURE 1. HR (upper panel) and mean arterial BP (MABP) (lower panel) changes in response to a meal alone (filled circle) and a meal followed by exercise (open circle) in elderly subjects with PPH. Premeal HR and MABP were similar, as were the MABP decline and HR increase within 35 minutes after the start of the meal. Compared with control day, walking resulted in a transient but significant increase in both HR ($p = 0.0002$) and MABP ($p = 0.0052$). Black bar, the exercise period.

Postprandial walking may transiently counteract postprandial hypotension by increasing heart rate and cardiac output, mainly through vagal withdrawal and activation of the skeletal muscle pump, which enhances venous return and stroke volume. However, this pressor effect is short-lived and disappears after exercise cessation, likely reflecting impaired sustained sympathetic compensation in frail elderly patients.



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Pharmacologic therapies

Acarbose [43, 44]/voglibose [45]

α -glucosidase inhibitors; delay gastric emptying, reduce SBP drop, HR rise, and postprandial glucose; effective in diabetes and autonomic failure

Somatostatin analogs [46]

Octreotide reduces splanchnic blood pooling

Caffeine/cold glucose [47]

May acutely raise BP

NSAIDs/CGRP [46]

Potential vasoconstrictive effects

DPP-4 inhibitors [48, 49]

Vildagliptin, sitagliptin: case reports suggest benefit

GLP-1 analogs [21]

Potential future therapy for PPH with autonomic dysfunction (e.g., Parkinson's)

Norepinephrine-based therapy [50]

Replacers (midodrine, droxidopa) for low sympathetic reserve; enhancers (pyridostigmine, atomoxetine, yohimbine) for preserved reserve

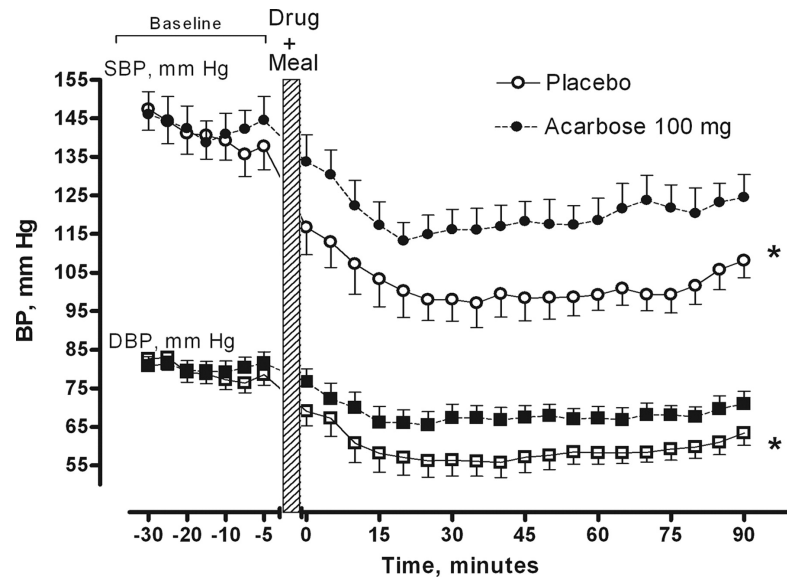


Acarbose, an α -Glucosidase Inhibitor, Attenuates Postprandial Hypotension in Autonomic Failure

Cyndya Shibao, Alfredo Gamboa, Andre Diedrich, Cynthia Dossett, Leena Choi, Ginnie Farley, and Italo Biaggioni | [AUTHOR INFO & AFFILIATIONS](#)

Hypertension • Volume 50, Number 1 • <https://doi.org/10.1161/HYPERTENSIONAHA.107.091355>

Acarbose is an oral α -glucosidase inhibitor administered at the beginning of meals. By delaying carbohydrate absorption, it blunts postprandial glucose and insulin peaks, reduces meal-induced splanchnic vasodilation, and attenuates the fall in blood pressure. Its effect in PPH appears to be mediated by preservation of vascular resistance rather than sympathetic activation.



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Coexisting OH (orthostatic hypotension)

Screening [51]

Measure BP/HR supine and after 3 min standing; SBP drop ≥ 20 mmHg or DBP ≥ 10 mmHg

Patient education [51]

Rise slowly, avoid heat/alcohol/large meals, use physical counter-maneuvers

Supine hypertension

Definition [52]

SBP ≥ 140 mmHg or DBP ≥ 90 mmHg after > 5 min supine

Non-pharmacologic management

Head-up tilt during sleep, small bedtime snack, nighttime enteral feeding



GRAZIE PER L'ATTENZIONE

