Resistant hypertension

Ann Bugeja MD, Gregory Hundemer MD MPH, Swapnil Hiremath MD MPH

■ Cite as: *CMAJ* 2024 July 29;196:E905. doi: 10.1503/cmaj.240206

1 Resistant hypertension is defined as blood pressure that is above target levels despite optimal use of 3 types of blood pressure–lowering medications, preferably including a diuretic[1]

First-line medications are renin–angiotensin system inhibitors, dihydropyridine calcium-channel blockers, and thiazide diuretics. Resistant hypertension has an estimated prevalence of 30% among those with hypertension.[2]

2 An out-of-office measurement can confirm that blood pressure is uncontrolled

Out-of-office measurement (24-h ambulatory or home blood pressure monitoring) helps rule out white-coat effect. About 35% of patients with apparent treatment-resistant hypertension are nonadherent to their prescribed medications.[1,2] A nonjudgmental discussion with a prescriber or pharmacist can help detect some nonadherent patients, but more accurate diagnosis requires a referral to a specialist for therapeutic drug monitoring or direct observed therapy testing.[2]

3 Use of substances with potential to interfere with blood pressure control should be considered

Optimizing blood pressure–lowering medications to the highest tolerated doses and eliminating substances that can raise blood pressure (Appendix 1, available at www.cmaj.ca/lookup/doi/10.1503/cmaj.240206/tab-related-content) can improve blood pressure control in most patients with apparent treatment-resistant hypertension.[3]

4 Primary aldosteronism accounts for 10%–20% of resistant hypertension

Clinical trials comparing blood pressure–lowering medications found that spironolactone had the largest effect.[1] Spironolactone is therefore the preferred choice after first-line medications in patients with resistant hypertension, followed by α- and β-adrenergic antagonists and clonidine, which were more effective than placebo and similar in efficacy to each other.[1] The high prevalence of primary aldosteronism among patients with resistant hypertension likely accounts for the greater benefit of spironolactone. Spironolactone may be prescribed earlier if aldosterone excess is presumed to be contributing to the hypertension.[4,5]

5 Patients with suspected or confirmed resistant hypertension should be referred to a hypertension centre

At specialized centres, providers can test for nonadherence, diagnose primary aldosteronism, and perform adrenal vein sampling to determine the suitability of surgery to cure primary aldosteronism.[1]

References

1. Hiremath S, Sapir-Pichhadze R, Nakhla M, et al. Hypertension Canada's 2020 evidence review and guidelines for the management of resistant hypertension. *Can J Cardiol* 2020;36:625-34.
2. Bourque G, Ilin JV, Ruzicka M, et al. Nonadherence is common in patients with apparent resistant hypertension: a systematic review and meta-analysis. *Am J Hypertens* 2023; 36:394-403.
3. Lerma EV, Luther JM, Hiremath S. Drug induced hypertension. In: *Hypertension secrets, 2nd edition*. Elsevier; 2022.
4. Hundemer GL, Agharazii M, Madore F, et al. Subclinical primary aldosteronism and cardiovascular health: a population-based cohort study. *Circulation* 2024;149:124-34.
5. Brown JM, Siddiqui M, Calhoun DA, et al. The unrecognized prevalence of primary aldosteronism: a cross-sectional study. *Ann Intern Med* 2020;173:10-20.

Competing interests: Gregory Hundemer reports funding from the Canadian Institutes of Health Research and the Kidney Foundation of Canada. Swapnil Hiremath serves on the board of NephJC. No other competing interests were declared.

This article has been peer reviewed.

Affiliations: Division of Nephrology, The Ottawa Hospital; Department of Medicine and Kidney Research Centre, Ottawa Hospital Research Institute, University of Ottawa, Ottawa, Ont.

Correspondence to: Ann Bugeja, abugeja@toh.ca