

Nocturnal Hypertension

Hipertensión arterial nocturna

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The transition between office-based and ambulatory blood pressure (BP) recordings, particularly with the use of home and ambulatory blood pressure monitoring (HBPM and ABPM), has allowed greater recognition of nocturnal hypertension (NHTN) and abnormal patterns of nighttime BP lowering.

Since the communication by O'Brien et al., (1) in which hypertensive patients with a lower decrease in nighttime blood pressure (non-dippers) had a more frequent history of stroke, numerous publications and some reviews, such as those of the international database IDACO, (2) have appeared, pointing out the prognostic value of NHTN, both in hypertensive, as well as in diabetic and chronic renal patients. In this meta-analysis, the authors demonstrate that the increased risk of overall mortality and cardiovascular events attributed to NHTN (with every 10-mmHg increment), daytime HTN (with every 10-mmHg increment), nighttime/daytime BP ratio, and the non-dipping status of NHTN, is statistically significant after adjusting for age, sex, body mass index, smoking, alcoholism, cholesterolemia, history of cardiovascular disease, diabetes, and antihypertensive drug treatment. However, when NHTN is adjusted for daytime HTN and vice versa, only NHTN and the non-dipping status are statistically significant.

Subsequently, population-based studies have been published, such as those of Ohasama, (3) Copenhagen, (4) and PAMELA, (5) among others, which also demonstrate that home and 24-h BP monitoring are superior to office BP in determining the risk of all-cause death and cardiovascular death. Thus, systolic BP was superior to diastolic BP, and nocturnal BP was superior to diurnal BP in determining the risk of death and cardiovascular death.

Some of the problems in determining NHTN are sleep quality during measurement (insomnia, noc-

turia), assessment of actual time in bed, (6) ambient temperature (heat), daytime BP treatment, etc., that hinder reproducibility. (7) This problem is greater in the assessment of nighttime BP lowering relative to daytime BP (dipping, non-dipping, riser).

Isolated systolic nocturnal hypertension (ISNHTN), characterized by a daytime BP less than 135/85 mmHg and a nighttime BP greater than 120/70 mmHg, is a condition that has aroused interest because it is not detected by office BP monitoring or by HBPM. (8) Its prevalence is 6-10% in the general population, higher in South America and Japan than in Europe. Several pathophysiological mechanisms have been implicated in the relationship between ISNHTN and worse cardiovascular prognosis, such as sympathetic activation, altered baroreflex sensitivity or autonomic failure, decreased diurnal sodium excretion, natriuresis due to nocturnal pressure, insulin resistance, impaired endothelial function, and sleep apnea. Patients with ISNHTN tend to be older, male, obese, with diabetes, increased heart rate, and history of cardiovascular disease. (9)

Also, in the case of refractory hypertension, defined as office BP greater than 140/90 mmHg despite treatment with three classes of drugs, including diuretics, or four classes of drugs without control of HTN, the circumstance of presenting NHTN was associated with an increased risk of cardiovascular events for every 10-mmHg increment, after adjusting for daytime BP levels. (10)

The management of NHTN is especially important to prevent cardiovascular events, (especially heart failure), as well as target organ damage, as in chronic kidney disease and cognitive impairment. (11) Nocturnal hypertension involves mechanisms that are the same as those related to the development of heart failure. Therefore, new treatments in heart failure, such

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as sodium-glucose cotransporter-2 inhibitors, mineralocorticoid receptor blockers, sacubitril-valsartan, etc., are being tested in the treatment of NHTN, (12) as well as in diabetic patients, without signs of heart failure, in which NHTN is associated with the development of diastolic dysfunction. (13)

The present issue of the Argentine Journal of Cardiology presents the study of Perea J et al. (14), in which a prevalence of NHTN of almost 64% was retrospectively observed in a contemporary cohort, with significant role as an independent predictor of adverse cardiovascular events, even when considering for the presence of daytime HTN. The categorization of the severity of NHTN and its statistically significant correlation with the incidence of major cardiovascular events should be highlighted as originality of the study. This finding adds to what we have previously reported in hypertensive patients and in population-based studies.

Conflict of interest

None declared.

(See author conflict of interests form on the web/Additional material).

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