Definition of White Coat Hypertension
Ambulatory Blood Pressure, Self-Measured Blood Pressure, or Both?

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The use of blood pressure (BP)-measuring techniques outside the clinical setting, such as self-measurement at home or ambulatory BP monitoring (ABPM), has grown considerably, and they are useful tools in the diagnosis and management of patients with hypertension. Obtaining a BP measurement that is closer to the individual's actual BP, reducing the impact of a generally hostile medical setting, and providing information about the effects of the main sources of BP variability all seem to be beneficial for patient diagnosis and therapeutic management.1

The 2 main problems when measuring BP outside the clinical setting are, on the one hand, the limited available data for establishing normality criteria in the various measurement estimators2 (24-hour, daytime and nighttime pressures) and, on the other, the appearance of new patient categories according to whether values measured in the clinical setting and those measured at home or in ABPM match or not. Indeed, the difference between such values has given rise to 2 new patient categories: patients with normal values at doctor's office but who present elevated ones at home or during 24-hour ABPM (24-hour or daytime), who are classified as presenting with masked hypertension, and patients with elevated values at the doctor’s office and normal figures at home or in ABPM, known as having white coat hypertension.

In the group of patients with masked hypertension, which can affect ≤30% of the population (more common in treated patients), although there are few prospective data, there is a general consensus that this situation involves high cardiovascular risk, and even more so because it could go unnoticed. Subjects with this condition therefore tend to be excluded from the benefits of treatment or, in the treated population, the benefits of proper BP control.1

Although white coat hypertension has been known for ≈30 years, there are still important doubts regarding its significance and how to manage patients with this condition. With a frequency of ≤30%4 (even greater in the treated population),5 a cardiovascular risk similar to that of subjects with normal BP has been reported in some cases,6 whereas other authors believe that it is a condition that carries an increased risk.7 Because of these discrepancies, there is no consensus regarding the need for treatment or the type of follow-up required in this group of patients.

In this issue of Hypertension, Mancia et al6 evaluated the incidence of overall mortality and cardiovascular mortality after 16 years of follow-up in a group of 2051 subjects, representative of the general population in northern Italy, according to the categories obtained by the combination of clinical measurements, self-measurements, and 24-hour values. The subjects classified as having white coat hypertension (elevated values in a clinical setting and normal values either at home or with regard to the mean 24-hour value) present a significantly greater risk of overall and cardiovascular mortality (in the latter case not significant after adjusting for confounding variables) than those with normal BP values.

These results are interesting and provide evidence about white coat hypertension as an intermediate risk category, either because of the ease of developing sustained hypertension in the future or because, even when BP values in a nonclinical setting are normal, they are still higher than those of the normotensive population. Caution is required, however, with some aspects of the study. On the one hand, the number of fatal events is relatively low, especially with regard to cardiovascular mortality, where adjustment for confounding factors eliminates the significance of the association found with white coat hypertension. On the other hand, the authors only report mortality data, whereas the total number of both fatal and nonfatal events is unknown. These figures would have enabled a more precise evaluation, both because of the purer effect of the BP values on the total number of events and because of the fact that there would have been more events.

The other aspect that deserves a special mention is the fact that many of the patients classified as presenting with white coat hypertension do not actually have it because more than half of them presented higher-than-normal values when BP was self-measured or during the 24-hour ABPM. When the patients were divided into 2 groups with true white coat hypertension (normal self-measured and 24-hour BP) or partial white coat hypertension (either self-measured or 24-hour BP higher than normal), the former presented a risk that was not significantly greater than that of the population with normal BP.

Three aspects derived from these results should be considered and refer to the standardization of the different types of measurement, the establishment of risk categories based on continuous variables with a continuous relationship to risk, and the possible effect of treatment and follow-up on these patients.

With regard to measurement standardization, although the 3 forms of BP measurement can be considered as complementary,
a great deal of the differences found is attributable to incorrect technique or limited technique standardization. This affects self-measurement, especially with regard to the number of measurements obtained and the number of monitored days. It also affects ABPM, the reproducibility of which could be mediated by the quantity and quality of the individual’s physical and mental activity and by hours and quality of sleep on the day that monitoring takes place. However, clinical measurement is clearly the most affected where an important number of factors could substantially alter BP values. In this respect, the use of automated systems that do not require an observer’s participation tends to minimize the differences found in relation to self-measurement or ABPM.

The second important aspect refers to the artificial categorization of continuous variables with a continuous relationship to self-measurement or ABPM. The use of automated systems that do not require an observer’s presence with white coat hypertension have BP values that are midway between hypertensive and normal. This is true for clinical and also for self-measured and 24-hour values. In this respect, it is not surprising that they are on an intermediate level of risk of complications between the other 2 groups. When the same authors separate the group of patients with white coat hypertension into true or partial cases, the phenomenon recurs, with all BP measurement values progressing from 1 group to the other. It would therefore appear that the 3 forms of measuring BP are complementary measurements, enabling us to position patients on a somewhat more precise risk scale than with the use of 1 form of these measurements alone. A risk score depending on the degree of elevation of each type of BP measurement method could be more useful than definitions based on the differences between measurements with regard to whether they are normal or elevated.

The last aspect is eminently practical and refers to the message that can be transmitted to the doctor when facing these categories of white coat hypertension or masked hypertension. In the latter group, when it is decided to start antihypertensive treatment, it is clear that management should be based on the elevated BP value (measured at home or ABPM). The main problem lies in subjects who present white coat hypertension. If, as it seems, it is not a harmless condition, management is unclear whether the decision is to start antihypertensive treatment. There may not be a significant effect on reducing clinical (the magnitude of the white coat effect remains) or self-measured or ambulatory BP values (if they were already within normal limits). In this respect, the study by Mancia et al could help to establish a pattern. According to the study, a diagnosis of white coat hypertension would require both measurements (at home and in an ambulatory setting) to be taken and to be normal. In these patients, who belong to a risk category that is not clearly greater than that of subjects with normal BP, the mere observation of their evolution with periodic measurements (both at home and in an ambulatory setting) would be sufficient to confirm that they remain in the same category. In contrast, when 1 of those measurements is abnormal or becomes abnormal over time, they could supposedly benefit from antihypertensive treatment, with the abnormal measurement being the main way of assessing the effect of the treatment. These considerations are obviously completely empirical and are highly speculative. Only controlled studies in which treatment is guided by measurements made in nonclinical settings can provide further evidence about the best way to protect this population from cardiovascular disease.

Disclosures

None.

References

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