Body Position and Quality of Sleep Interfere With Day-Night Blood Pressure Dip

To the Editor:

We read with interest the study of Verdecchia et al1 on the prognostic significance of the day-night blood pressure (BP) dip and the early morning BP surge. The authors rightfully question the contradicting results of previous reports, suggesting that the early morning BP surge is a risk factor for cardiovascular events, whereas other studies demonstrate that nondipping (and, as such, a lack of surge) is a relevant cardiovascular risk factor.2 The current findings add to the controversy but put more weight on the scale against the relevance of the early morning BP surge. But before extrapolating the conclusions to the general hypertensive population, one should realize that there are potential confounders that were not analyzed.

In general, the ambulatory BP monitoring devices are placed around the nondominant (mostly left) arm. In clinical observations, we have seen that most subjects are sleeping on their back or on the right lateral side. While sleeping on the right lateral side, the left arm is clearly above the right atrium level and, thus, BP readings will be too low. We measured BP on both arms with the body in supine position and lying on the right and the left lateral sides.3 We found on average 15-mmHg lower BP readings with the arm above heart level. Unfortunately, in both the current and in previous studies, the body and the arm position are seldom reported. We realize that such a procedure is challenging, but observations in sleep laboratories learn that changes in posture cause most of the nighttime BP variation.4

The quality of sleep directly influences BP. Some specific sleep disorders, such as sleep apnea syndrome, are frequently characterized by nondipping BP patterns. BP and sleep interaction will directly have consequences for the classification of dipper/nondipper and on the early morning BP surge. In fact, a substantial number of patients report sleep disturbances.5 The current study and most of the previous studies give no information about sleep quality during ambulatory BP monitoring. To our opinion, the above-mentioned factors may modify the day/night differences and thus the preawakening BP surge. Both factors may strongly interfere and lead to misclassification. More data are desirable with regard to these 2 confounders.

Disclosures
None.

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