Potential Use of Melatonin as Adjunct Antihypertensive Therapy

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Systemic arterial blood pressure (BP) normally declines overnight during sleep, yet some hypertensive patients lack this sleep-related “dip” in BP. These so-called nondippers are generally thought to be at higher risk for adverse cardiovascular events.1 One report found that such nondipper hypertensive patients have reduced nocturnal melatonin secretion compared to other hypertensive subjects.2 Recently, it has been demonstrated that 3 weeks of night-time melatonin supplementation lowers night-time BP levels in untreated men with essential hypertension.3 In this issue of American Journal of Hypertension, Cagnacci and colleagues describe the effect of 3 weeks of bedtime melatonin administration on BP in women in a double-blind, placebo-controlled, crossover trial.4 They studied 9 normotensive women and 9 women with essential hypertension controlled by angiotensin-converting enzyme (ACE) inhibitors. They found a reduction of night-time BP in the combined group of 18 middle-aged women. This study extends the earlier finding that melatonin administration can lower night-time BP levels in men with essential hypertension.3

The double blind, placebo-controlled design and the repeated BP assessments are strengths of the current study. Of special interest was the indication that night-time melatonin administration is most effective in those subjects who showed the smallest decline in BP at night under placebo conditions (akin to nondippers). This is an important area of research that may lead to a new strategy in the treatment of hypertension with few adverse side effects.

A limitation of the study is that the main finding of a reduction of night-time BP is based on pooling of data from women with hypertension treated with ACE inhibitors and normotensive women. No such statistical analysis was provided for both groups independently. Cagnacci et al did provide data showing similarity in age, body mass index (BMI), and BP between the groups. Larger studies in both groups separately will be required to verify the BP reduction in both groups independently. A second limitation of the study, which is recognized by these investigators, is that no measures of sleep quantity or quality were obtained. Exogenous melatonin administration can improve sleep quality during the daytime5 and endogenous melatonin levels seem involved in normal sleep at night.6,7 Of specific relevance to the current study, administration for 3 weeks of 2.5 mg of melatonin 1 h before scheduled bedtime has been shown to improve measures of sleep quality in untreated patients with hypertension.3 However, in that latter study, no correlation was observed between the changes in sleep quality and those in night-time BP. In the current study, without measures of sleep quality, it could not be established whether or not part of the night-time BP reduction was correlated with an improvement of sleep quality. Future studies will be required to assess whether improvement of sleep or other physiologic mechanisms may underlie the observed decrease in BP.

In conclusion, the results of this study support the finding that prolonged night-time melatonin administration can specifically reduce night-time BP and indicate that subjects with a limited BP reduction at night may benefit most. More studies are required to investigate the underlying mechanism involved, to investigate melatonin as an add-on therapy to other antihypertensive therapies, and to study the chronic use of melatonin in the reduction of night-time BP.

References


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