Response to How Is Slow Wave Sleep Related to Hypertension?

We thank Dr Pressman1 for his thoughtful comments. He raises the important points that reduced slow-wave sleep (SWS) may reflect other changes in sleep that may be more proximally related to hypertension development, such as periodic limb movements or arousals. Reduced SWS may also be correlated with dynamic or stage-dependent aspects of sleep, such as rapid eye movement–predominant sleep apnea or sleep efficiency. We assessed whether confounding with periodic limb movements or rapid eye movement sleep apnea could have explained our findings. Both of the latter were associated with quartiles of SWS (P=0.017 and P<0.0001, respectively) but were not associated with hypertension incidence in this sample. Furthermore, the addition of periodic limb movements and rapid eye movement respiratory disturbance index to the multivariate model did not significantly alter the relationship between SWS and incident hypertension in our cohort.

We highlight that the mechanisms underlying reduced SWS and incident hypertension are not clear. It is possible that low SWS is a “biomarker” for other unmeasured indices of poor health or other sleep disturbances not captured by standard polysomnography scoring. In addition, inferences regarding causality are limited because of the observational study design. Nonetheless, a potentially important physiological link between SWS and blood pressure is consistent with other data implicating reduced SWS in insulin resistance and obesity and with the known changes in autonomic function (including acute blood pressure levels) during SWS. We hope our study will suggest additional research to examine such associations in other samples and begin unraveling the specific aspects of altered sleep that most importantly contribute to adverse vascular health.

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Reference
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