Cardiovascular Autonomic Dysfunction as a Link Between Insulin Resistance and Nocturnal Blood Pressure Elevation

To the Editor:

I read with interest the article by Lurbe et al.1 on the relationship between insulin resistance and the ambulatory blood pressure components in obese children and adolescents. The authors have observed that nocturnal systolic blood pressure and heart rate were significantly higher in subjects in the highest homeostasis model assessment index tertile. They conclude that the increased nocturnal blood pressure and heart rate associated with hyperinsulinemia may contribute to heightened cardiovascular risk associated with this condition. I agree with the authors, and I want to suggest cardiovascular autonomic function as a possible link between insulin resistance and increased nocturnal blood pressure.

This hypothesis is supported by several pieces of evidence. Scherrer and Sartori2 have observed that hyperinsulinemia activates the central sympathetic drive. Several studies performed by spectral analysis of heart rate variability have shown sympathetic hyperactivity in insulin-resistant subjects with normoglycemia.3,4 In a previous study performed in adult subjects, Perciaccante et al.5 have reported a relationship between insulin resistance and cardiovascular autonomic dysfunction, characterized by an impaired circadian rhythm of heart rate variability with a sympathetic hyperactivity at nighttime. Moreover, the authors have reported that this hyperactivity of sympathetic component at nighttime (evaluated by heart rate variability analysis in the frequency domain as low frequency expressed in normalized units and the low frequency:high frequency ratio) is correlated with the highest homeostasis model assessment index.

I conclude that insulin resistance has an impact on nocturnal blood pressure and heart rate, and this may be because of the effect of the insulin resistance on the cardiovascular autonomic activity.

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Disclosures

None.

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