Effects of obstructive sleep apnea and atrial fibrillation on blood pressure variability

To the Editor,

We have read with great interest the article published by Taher et al. (1), which was about the effects of blood pressure variability (BPV) on cardiovascular outcomes of patients with hypertension. It is impressed in the article that increased BPV is associated with increased future cardiovascular events (1).

Obstructive sleep apnea (OSA) is defined as the occurrence of the complete or partial obstruction of airways during sleep. OSA is common in overweight and obese people, and it is associated with increased rates of cardiovascular events, including coronary artery disease, heart failure, pulmonary hypertension, stroke, and atrial fibrillation (2). During night time, blood pressure usually decreases to nearly 10%–20% of the daytime values due to increased vagal tonus, and this situation is described as "dipping". In patients with OSA, blood pressure may not decrease at night and may even remain similar to that at day time. Therefore, OSA leads to increased BPV (3). In the present study, some of the participants were obese, and OSA might be present in a part of the study population.

Atrial fibrillation is the most common chronic arrhythmia in the general population. Cardiac output differs by beat-to-beat in patients with atrial fibrillation, and this condition causes beat-to-beat BPV (4). The hypothesis that BPV is related to increased risk for new onset atrial fibrillation is conflicting. Although it is reported in a meta-analysis that BPV is not associated with increased risk of new onset atrial fibrillation, there are some studies demonstrating the positive correlation between BPV and atrial fibrillation development (5).

To conclude, OSA and atrial fibrillation are frequent diseases and they are related to both BPV and future cardiovascular events. Therefore, we think that it could be better if the presence and effects of these comorbidities were also evaluated in the study.

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Author`s Reply

To the Editor,

We would like to thank authors for their interest in our paper (1) and their valuable comment.

The main aim of our study (1) was to know which method of blood pressure variability assessment is better in predicting the complications; thus, our inclusion and exclusion criteria as well as the study design were selected to answer this main question. We did not collect data regarding obstructive sleep apnea (OSA) or atrial fibrillation. However, we could figure out the prevalence of obesity in our data as it is relatively related to OSA. The prevalence of obesity in our data was 16.4%. Interestingly, after applying Mann–Whitney U test, we found that obese patients are more likely to present with high systolic BPV in their visit-to-visit measurements with a significant p-value of 0.03.

We think such comments open a new area of research to find other possible causes of high BPV as few studies had tackled this issue.

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