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Title: Tracheal sound intensity relates to daytime high blood pressure in non-apnoeic snorers

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Body: Background: The relationship between snoring and cardiovascular diseases had been assumed to be due to co-existing sleep-disordered breathing (SDB). Recently, we have reported that snoring sound intensity as assessed by ambient sound pressure level during sleep is related to daytime blood pressure independently of SDB in patients with primary snoring or mild SDB. We hypothesized that tracheal sound intensity, which is more immune to environmental noises than ambient sound pressure, during sleep may be related to daytime blood pressure. Method: Clinical records and polysomnographic records of consecutive 1176 patients with suspected SDB were reviewed. Tracheal sound intensity was assessed as an equal sound pressure level (TS-Leq) during sleep. Daytime high blood pressure (HBP) was defined as taking antihypertensives, or having a systolic blood pressure (SBP)≥140 or a diastolic blood pressure (DBP)≥90 at the patients' first visit to our clinic. Results: A logistic regression analysis in the entire patients showed that patient' age ($p<0.00001$), body mass index (BMI; $p<0.00001$), TS-Leq ($p=0.00018$), and apnea-hypopnea index (AHI; $p=0.012$) were independent determinants of HBP. The same analysis in the non-apneic (AHI<5) and normal-weight (BMI<25) patients (n=252) showed only age ($p<0.00001$) and TS-Leq ($p=0.0062$) were independent determinants of HBP. The Odds ratio for HBP at 6dB increase of TS-Leq was 1.74 in the non-apneic normal-weight patients. Conclusion: Tracheal sound intensity during sleep is a determinant of daytime high blood pressure in non-apneic normal-weight patients. It may suggest a pathologic role of non-apneic snoring.