Continuous positive airway pressure improves blood pressure and serum cardiovascular biomarkers in obstructive sleep apnoea and hypertension

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Shareable abstract (@ERSpublications)
In subjects with moderate-to-severe OSA and receiving three or more antihypertensive drugs, continuous positive airway pressure for treatment of OSA improves blood pressure control, and may alleviate subclinical myocardial injury and strain https://bit.ly/3u6DsAe


Background: The impact of treatment for obstructive sleep apnoea (OSA) on reduction of cardiovascular risk is unclear. This study aimed to examine the effect of continuous positive airway pressure (CPAP) on ambulatory blood pressure (BP) and subclinical myocardial injury in subjects with OSA and hypertension.

Methods: This was a parallel-group randomised controlled trial. Subjects with hypertension requiring at least three antihypertensive medications and moderate-to-severe OSA were enrolled. Eligible subjects were randomised (1:1) to receive either CPAP treatment or control (no CPAP) for 8 weeks. Changes in ambulatory BP and serum biomarkers were compared. Stratified analysis according to circadian BP pattern was performed.

Results: 92 subjects (75% male; mean±SD age 51±8 years and apnoea–hypopnoea index 40±8 events·h⁻¹, taking an average of 3.4 (range 3–6) antihypertensive drugs) were randomised. The group on CPAP treatment, compared with the control group, demonstrated a significant reduction in 24-h systolic BP (−4.4 (95% CI −8.7 to −0.1) mmHg; p=0.046), 24-h diastolic BP (−2.9 (95% CI −5.5 to −0.2) mmHg; p=0.032), daytime systolic BP (−5.4 (95% CI −9.7 to −1.0) mmHg; p=0.016) and daytime diastolic BP (−3.4 (95% CI −6.1 to −0.8) mmHg; p=0.012). CPAP treatment was associated with significant BP lowering only in nondippers, but not in dippers. Serum troponin I (mean difference −1.74 (95% CI −2.97 to −0.50) pg·mL⁻¹; p=0.006) and brain natriuretic peptide (−9.1 (95% CI −17.6 to −0.6) pg·mL⁻¹; p=0.036) were significantly reduced in CPAP compared with the control group.

Conclusions: In a cohort with OSA and multiple cardiovascular risk factors including difficult-to-control hypertension, short-term CPAP treatment improved ambulatory BP, and alleviated subclinical myocardial injury and strain.