EFFECT OF CONTINUOUS-POSITIVE AIRWAY PRESSURE, WEIGHT LOSS OR BOTH ON PERIPHERAL AND CENTRAL BLOOD PRESSURE IN OBESE SUBJECTS WITH OBSTRICUTIVE SLEEP APNEA

Oral Contributions
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Background: Obesity and obstructive sleep apnea (OSA) tend to co-exist and are associated with hypertension. The effects of weight loss and continuous positive airway pressure (CPAP) on blood pressure has been previously studied individually, but the incremental benefit of combination therapy (weight loss and CPAP therapy) over either therapy alone in obese patients with OSA is unknown.

Methods: We randomized 139 adults with obesity (BMI>30 kg/m2) and moderate to severe OSA (apnea-hypopnea index≥15 events/hour) to: 1) CPAP therapy (n=44); 2) weight loss therapy (n=48); or 3) combined CPAP and weight loss therapy (n=47) for 24 weeks. We assessed changes in mean arterial pressure (MAP) and central pulse pressure (cPP, measured via carotid tonometry).

Results: In intent to treat-analyses, weight loss therapy was not associated with a decrease in MAP, whereas significant reductions were observed with CPAP (-3.70 mmHg; 95%CI=-6.86 to -0.53; P=0.02) and combination therapy (-6.94 mmHg; 95%CI=-10.22 to -3.66; P<0.0001). Combination therapy was superior to weight loss alone (between-group difference in MAP=5.12 mmHg; 95%CI=9.86 to 0.38; P=0.03). In pre-specified analyses restricted to subjects who complied with assigned therapy, combination therapy had an even greater effect at 24 weeks (-9.14 mmHg; 95%CI=-13.01 to -5.27; P<0.0001), whereas CPAP alone had a modest effect (-3.14 mmHg; -6.27 to -0.02; P=0.049) and weight loss alone had a non-significant effect (-1.89 mmHg; 95%CI=-5.79 to 2.01; P=0.34) on MAP. In compliant subjects, combination therapy lowered MAP more than either weight loss alone (between group difference =-7.25 mmHg; 95%CI=-12.75 to -1.75; P=0.01) or CPAP alone (between group difference =-6.00 mmHg; 95%CI=-1.02 to 10.97; P=0.019). In intent-to-treat analyses, cPP was reduced in all 3 arms (-3.53 mmHg; 95%CI=-6.23 to -0.84; P=0.01), without significant differences between the groups.

Conclusions: In obese subjects with OSA, combined therapy with CPAP and weight loss reduces MAP more than either therapy alone. These findings have important implications for cardiovascular risk reduction in this population.