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Reviews

Continuous positive airway pressure reduces blood pressure in patients with obstructive sleep apnea; a systematic review and meta-analysis with 1000 patients

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Abstract

Background:

Obstructive sleep apnea (OSA) may lead to the development of hypertension and therapy with continuous positive airway pressure (CPAP) can promote reduction in blood pressure.

Objective:

The objective of this study is to review systematically the effects of CPAP on blood pressure in patients with OSA.

Methods:

The search was conducted in the following databases, from their beginning until February 2013: MEDLINE, Embase, Cochrane CENTRAL, Lilacs and PEDro. In addition, a manual search was performed on references of published studies. Randomized clinical trials (RCTs) that used CPAP compared with placebo CPAP or subtherapeutic CPAP for treatment of patients with OSA and that evaluated office SBP and DBP and 24-h ambulatory blood pressure were selected.

Results:

Sixteen RCTs were included among 3409 publications, totaling 1166 patients. The use of CPAP resulted in reductions in office SBP [−3.20 mmHg; 95% confidence interval (CI) −4.67 to −1.72] and DBP (−2.87 mmHg; 95% CI −5.18 to −0.55); in night-time SBP (−4.92 mmHg; 95% CI −8.70 to −1.14); in mean 24-h blood pressure (−3.56 mmHg; 95% CI −6.79 to −0.33), mean night-time blood pressure (−2.56 mmHg; 95% CI −4.43 to −0.68) and 24-h DBP (−3.46 mmHg; 95% CI −6.75 to −0.17). However, no significant change was observed in daytime SBP (−0.74 mmHg; 95% CI −3.90 to 2.41) and daytime DBP (−1.86 mmHg; 95% CI −4.55 to 0.83).

Conclusion:

Treatment with CPAP promoted significantly but small reductions in blood pressure in individuals with OSA. Further studies should be performed to evaluate the effects of long-term CPAP and the impact on cardiovascular risk.