Acute effects of continuous positive airway pressure on cardiac sympathetic tone in congestive heart failure.

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BACKGROUND: Depressed ventricular performance and neurohormonal activation are key pathophysiological features of congestive heart failure (CHF). Although angiotensin-converting enzyme inhibitors and beta-adrenoceptor blockers exert beneficial effects in CHF, mortality remains unacceptably high, and the development of further therapeutic approaches is warranted. Recent data suggest that continuous positive airway pressure (CPAP) may be of benefit in the treatment of CHF, although the mechanism for this action is incompletely understood. Methods and RESULTS:In the present study, we examined the effect of short-term CPAP (10 cm H(2)O for 10 minutes) on hemodynamics (Swan Ganz catheter) and total systemic and cardiac sympathetic activity (norepinephrine spillover method) in 14 CHF patients in New York Heart Association class III. The application of CPAP was associated with a fall in cardiac output (4.8+/-0.3 to 4.4+/-0.2 L/min; $P<0.05$) and a significant reduction in cardiac norepinephrine spillover (370+/-58 to 299+/-55 pmol/min; $P<0.05$), although total systemic norepinephrine spillover was unchanged. CONCLUSION:The short-term application of CPAP results in an inhibition of cardiac sympathetic nervous activity. Further investigation into the potential value of long-term CPAP in CHF patients is warranted.

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