

Congestive heart failure and continuous positive airway pressure therapy: support of a new modality for improving the prognosis and survival of patients with advanced congestive heart failure.

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Nasal continuous positive airway pressure therapy has recently been studied as a nonpharmacologic adjunct to congestive heart failure therapy. In patients with congestive heart failure, it was reported that continuous positive airway pressure therapy for the condition Cheyne-Stokes respiration with central sleep apnea led to long-term improvements in cardiac function and alleviation of heart failure symptoms. Cheyne-Stokes respiration with central sleep apnea is a frequent breathing disorder well described in patients with congestive heart failure, and is an associated risk factor for increased cardiovascular morbidity and mortality. These apneas cause an increase in sympathetic nervous system activity, which would maintain afterload at a high level or tend to increase it with time, leading to further compromise of ejection fraction. Continuous positive airway pressure appears to benefit the failing heart by increasing intrathoracic pressure, which is believed to cause an increase in cardiac output by decreasing the pressure gradient across the heart wall and allowing the left-ventricular end diastolic volume to decrease, thereby reducing the afterload. This beneficial "resting" of the heart has been documented to increase left-ventricular ejection fraction, increase cardiac index, improve inspiratory muscle strength, lower blood pressure and heart rate, decrease plasma and overnight urinary levels of norepinephrine, lower levels of atrial natriuretic peptide and endothelin-1, and increase heart rate variability. Other benefits include improvement in New York Heart Association functional class status and improvement in dyspnea.

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