

**Harvard Medical School Department of
Continuing Education and the Cardiovascular
Division of the Department of Medicine,
Brigham and Women's Hospital**



Cardiology Rounds
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**Obstructive Sleep Apnea and Heart Failure:
Pathophysiologic and Therapeutic Implications**

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Objectives:

Obstructive sleep apnea (OSA) occurs more commonly in patients with heart failure than in the general adult population. Pathophysiologically, the frequent obstructions of the pharynx during sleep augment ventricular load and sympathetic activity. Use of continuous positive airway pressure (CPAP) provides a promising new modality to improve ventricular function, neurohumoral balance, and possibly cardiovascular outcomes in patients with heart failure and OSA. In this issue of *Cardiology Rounds*, Dr. T. Douglas Bradley, an authority and leader in the field, reviews the mechanisms of OSA, as well as the rationale and current evidence for use of CPAP in individuals with both heart failure and OSA. The reader will gain a better understanding of OSA and the potential implications for CPAP as an adjunctive treatment for heart failure.

TEST:

1. Obstructive sleep apnea (OSA) is generally caused by a narrowed pharynx, which collapses during sleep, reducing neural input to the diaphragm.
True False
2. During OSA episodes, ineffective respiratory efforts generate more negative intrathoracic pressure that increases the hemodynamic load for both the left, as well as right ventricle.
True False
3. The frequent abrupt arousals from hypoxia and CO₂ retention in OSA can result in surges of sympathetic activity that elevates blood pressure, as well as heart rate.
True False
4. The diagnosis of OSA currently requires overnight polysomnography to document 10 or more episodes of apnea per hour.
True False

5. For patients with OSA and normal ventricular function, nasal CPAP has been shown to:
- a. improve sleep quality
 - b. decrease daytime sleepiness
 - c. improve neurocognitive function
 - d. decrease daytime blood pressure
 - e. all of the above
6. In relatively small trials of patients with heart failure and OSA, randomization to CPAP was associated with:
- a. reduced admissions for heart failure
 - b. reduced implantable cardiac defibrillator (ICD) firings
 - c. increases in left ventricular ejection fraction
 - d. improved survival
 - e. all of the above
7. Use of CPAP is complicated in patients with heart failure since beta-blockers and ACE inhibitors exacerbate OSA.
- True False

To receive AMA category 1 credit, you must correctly answer 60% of the test questions.

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