

# Obstructive Sleep Apnea Found a Cardiac Arrhythmia Risk Factor

BY KATE JOHNSON  
Montreal Bureau

BOSTON — Obstructive sleep apnea is a risk factor for cardiac arrhythmias, and cardiologists should consider the diagnosis and treatment of this sleep disorder in terms of cardioprotective benefit, according to Dr. Maria Teresa La Rovere.

In a study she presented in a poster at the annual meeting of the Heart Rhythm Society, Dr. La Rovere found a significant correlation between oxygen desaturation in obstructive sleep apnea syndrome (OSAS) and bradyarrhythmias, but not tachyarrhythmias.

"We found strong evidence that bradyarrhythmias are related to sleep apnea syndrome—whereas for tachyarrhythmias, the role of oxygen desaturation is more controversial," said Dr. La Rovere in an interview. Other factors may contribute to tachyarrhythmias, such as  $\beta_2$ -agonist treatment, which was found to be more common among patients who had tachyarrhythmias, she said.

The study included 300 subjects who were referred for sleep studies because of snoring. OSAS was diagnosed in 248 (83%) of them.

Although there was a trend toward more arrhythmias in the patients with OSAS than in those without OSAS (18% vs. 11%), the difference was not significant, reported Dr. Rovere, a cardiologist at the Fondazione Salvatore Maugeri clinic in Pavia, Italy.

Patients with arrhythmias were older than were nonarrhythmic patients (58 vs. 52 years) and they had more profound oxygen desaturation (23% vs. 15% total sleep time spent with less than 90% oxygen saturation).

Although no significant relationship was found between tachyarrhythmias and hypoxemia, bradyarrhythmias were significantly correlated. Patients with bradyarrhythmias had significantly more hypoxemia, compared with nonarrhythmic patients, with an apnea-hypopnea index of 54 vs. 31 and an

oxygen saturation nadir of 69% vs. 77%.

Dr. La Rovere said a recently published study performed in the general population and using a stricter definition of OSAS found similar evidence that people with sleep-disordered breathing have between two and four times the odds of having complex cardiac arrhythmias, compared with those without sleep apnea (*Am. J. Respir. Crit. Care Med.* 2006;173:910-6). Specifically, the study found that sleep-disordered breathing was associated with four times the odds of atrial fibrillation, three times the odds of nonsustained ventricular tachycardia, and almost twice the odds of complex ventricular ectopy, after adjustment for age, sex, body mass index, and prevalent coronary heart disease.

Another recently published study found that OSAS was associated with almost double the risk of stroke or death, even after adjustment for age, sex, race, smoking status, alcohol consumption, body mass index, diabetes mellitus, hyperlipidemia, atrial fibrillation, and hypertension (*N. Engl. J. Med.* 2005;353:2034-41).

Although treatment of OSAS with continuous positive airway pressure (CPAP) is well established for the relief of sleep disturbances and improvement in quality of life, Dr. La Rovere says cardiologists should also recognize its value in preventing the development of cardiac arrhythmias.

"The mechanism of breathing disorders also affects cardiac functioning. So in the long term, these subjects may also develop heart failure," she said. "I think there is an increasing awareness," but cardiologists have not yet focused on the cardiac benefits of treating sleep apnea.

She added that although CPAP not only prevents sleep-related heart rhythm disturbances, but can also correct them, it is advisable to consider a pacemaker for patients whose CPAP compliance is questionable. "I know the CPAP will correct my patient's arrhythmia, but I do not know if my patient will use the CPAP," she said. ■

# CPAP Lowers Blood Pressure in Patients With Sleep Apnea

BY JANE SALODOF  
MACNEIL  
Southwest Bureau

SAN DIEGO — Two weeks of continuous positive airway pressure significantly reduced the blood pressure of hypertensive obstructive sleep apnea patients in a small randomized controlled trial presented in a poster at the International Conference of the American Thoracic Society.

Dr. Daniel Norman reported that nighttime systolic, mean arterial, and diastolic blood pressure decreased by 6 mm Hg, 5 mm Hg, and 4 mm Hg, respectively, in 18 patients on continuous positive airway pressure (CPAP).

Daytime mean arterial pressure (MAP) and diastolic blood pressure each declined by 3 mm Hg as well. Though the difference was not statistically significant, daytime systolic blood pressure also dropped by about 2 mm Hg.

"This kind of improvement in blood pressure is similar to what you'd see with many hypertensive medications," Dr. Norman, a fellow in pulmonary and critical care at the University of California, San Diego Medical Center, said at a press briefing.

Based on these reductions, he added, "You would expect to see improvement in morbidity and mortality."

In contrast, 24-hour ambulatory blood pressure monitoring revealed no significant improvements in the blood pressure of 13 patients treated with supplemental oxygen or of 15 patients on placebo. The investigators adapted the equipment taken home by patients, so that the assigned apparatus looked the same regardless of which therapeutic option was delivered.

Though patients given supplemental oxygen did have better oxygenation saturation, this did not appear to have an impact on blood pressure, according to Dr. Norman and his coinvestigators in the departments of medicine and psychiatry at the university. They speculated that CPAP's ability to improve blood pressure may involve "mecha-

nisms other than improvement of nocturnal oxyhemoglobin saturation."

After 2 weeks of therapy, both the CPAP and supplemental oxygen groups registered improvements in average nocturnal saturation of oxyhemoglobin (SpO<sub>2</sub>) and average SpO<sub>2</sub> nadir. These values had been similar in all three groups at baseline, but the final SpO<sub>2</sub> values for both CPAP and supplemental oxygen patients were higher than those recorded in patients on placebo.

Apnea/hypopnea index (AHI) and oxygen desaturation



**The improvement in blood pressure [with CPAP] is similar to what you'd see with many hypertensive medications.**

DR. NORMAN

index (ODI) scores fell in the groups treated with CPAP or supplemental oxygen, but the investigators reported "the magnitude of change was smaller in the oxygen group and not enough to differentiate it from placebo."

Dr. Norman noted that obstructive sleep apnea is known to increase the risk of hypertension. He also acknowledged that half of the sleep apnea patients offered CPAP find they cannot tolerate it and seek other therapies, such as supplemental oxygen.

The trial doesn't rule out supplemental oxygen, he commented, "but it reaffirms that CPAP remains the gold standard of therapy."

The patients in the trial ranged from 25 to 65 years of age with a mean body mass index of 29.5-31.5 kg/m<sup>2</sup>. The only statistically significant difference in baseline characteristics was that the average systolic blood pressure was lower in placebo patients: 122.5 mm Hg vs. 135.1 mm Hg in the CPAP group and 132.5 mm Hg in the oxygen cohort.

Mean arterial pressure at baseline was 91.2 mm Hg in the placebo group, 94.9 mm Hg in patients treated with oxygen, and 98.1 mm Hg in the CPAP group. Average diastolic blood pressure was 75.6 mm Hg, 76 mm Hg, and 79.6 mm Hg, respectively. ■

# Bypass Patients Are at Increased Risk of AAA

PHILADELPHIA — Patients who have undergone coronary bypass surgery have an increased risk of also having an abdominal aortic aneurysm, according to results from a single-center study with 752 patients.

Based on this finding, screening for an abdominal aortic aneurysm (AAA) in patients with a history of coronary artery bypass graft (CABG) is "very important," Dr. Carlo A. Dall'Olmo said at the Vascular Annual Meeting.

"We believe that patients with a history of CABG should be added to the list of patients who are screened under the SAAAVE [Screening Abdominal Aortic Aneurysms Very Efficiently] Act," said Dr. Dall'Olmo, a vascular surgeon in private practice in Flint, Mich. This federal law, which goes into effect next January, allows for Medicare reimbursement for one-time AAA screening by ultrasound in selected patients. Right now, the list

of patients eligible for Medicare screening are men aged 65-75 years who are current or former smokers, and men and women aged 65-75 who have a family history of AAA.

Dr. Dall'Olmo and his associates are also starting a study to see whether patients with a history of coronary revascularization by percutaneous coronary intervention also have an increased prevalence of AAA.

Their current study included 517 men, of whom 47 (9.1%) were found by an ultrasound examination to have an AAA of 3.0 cm or greater in the anterior-posterior or transverse diameter. This compared with the usually reported prevalence of 3%-6% in men. In the group that Dr. Dall'Olmo and his associates studied, about two-thirds had not been previously diagnosed with an AAA. Six of the patients had aneurysms that were 5 cm or greater in diameter.

Of the 235 women screened, 12 (5.1%) had an AAA of 3.0 cm or greater, a rate much higher than the 1% reported prevalence for women in population-based studies. About half of the aneurysms had not been previously diagnosed, and two women had aneurysms that were 5 cm or more in diameter.

The prevalence went up sharply with smoking. Among men, never smokers had a 2.3% prevalence, former smokers had a 10.3% prevalence, and current smokers had an 18.6% prevalence of an AAA. In women, never smokers had a 1.6% prevalence, former smokers had a 6.9% prevalence, and in current smokers 18.7% had an AAA.

The prevalence rates also tracked higher with increased age. A history of diabetes or hypertension was not linked with an increased risk for AAA in these patients, Dr. Dall'Olmo said.

—Mitchel L. Zoler