

# Apnea Therapy Improves Metabolic Measures

BY SHERRY BOSCHERT

SAN FRANCISCO — Sleep apnea can cause metabolic dysfunction, some of which can be reversed by treating the disorder with continuous positive airway pressure, a small 8-week study of 29 patients suggests.

Nine women with polycystic ovarian syndrome (PCOS) and 20 women without PCOS, all of whom had obstructive sleep apnea, were treated with continuous positive airway pressure (CPAP) at home for 8 weeks. Investigators monitored the use of CPAP to ensure good compliance, and took metabolic measurements at the start and end of the study.

Measures of sleep quality improved for the cohort as a whole after treatment. This was accompanied by both nighttime and daytime reductions in catecholamine levels, Dr. David A. Ehrmann said at the Sixth Annual World Congress on Insulin Resistance Syndrome.

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“This has important implications in terms of both the metabolic and cardiovascular effects of obstructive sleep apnea in this population,” said Dr. Ehrmann, professor of medicine at the University of Chicago.

Sophisticated spectral analysis of heart rate variability as a measure of autonomic function showed that lowered catecholamine levels were reflected functionally in a slowing of heart rate, a lower autonomic function, and a lesser degree of epinephrine-induced variability in heart rate after treatment with CPAP, he added.

In lean subjects, greater compliance with CPAP therapy was associated with increased insulin sensitivity. Obese subjects showed a lesser improvement in insulin sensitivity—but an improvement nonetheless—that also was associated with greater use of CPAP, Dr. Ehrmann said. “There’s sort of a dose-response relationship between the use of CPAP and changes in metabolic measurements,” he noted.

Among the measures of sleep quality that improved significantly with CPAP therapy, the apnea-hypopnea index score decreased from 24 to 2 per hour of sleep. The oxygen desaturation index score decreased from 12 to 1 per hour of sleep. The arousal index score decreased from 27 to 23 per hour of sleep.

Sleep apnea is recognized as a reversible risk factor for hypertension and for a number of abnormalities associated with insulin resistance syndromes. Women with PCOS are predisposed to develop obstructive sleep apnea at a rate sevenfold higher than women without PCOS, previous studies suggest. Although obesity plays a role, it does not by itself fully account for the higher risk for sleep apnea in women with PCOS.

Nor does androgen excess explain the higher prevalence of sleep apnea with PCOS, he added. In the nine women with PCOS in his study, 24-hour cortisol levels did not change significantly after CPAP treatment, compared with baseline.

In a previous study of 53 women with PCOS and 452 controls, the PCOS group was 30 times more likely to have sleep-disordered breathing and nine times more likely to have daytime sleepiness after re-

searchers controlled for body mass index. Insulin resistance was a stronger predictor of sleep-disordered breathing than was age, BMI, or testosterone levels (J. Clin. Endocrinol. Metab. 2001;86:517-20).

A separate study found that in 29 women with PCOS and 4 controls with obstructive sleep apnea, the risk for apnea was seven times higher in the PCOS group (J. Clin. Endocrinol. Metab. 2006; 91:36-42). In that study, the likelihood of

impaired glucose correlated with the severity of sleep apnea.

Another study by Dr. Ehrmann and his associates showed that 29 women with PCOS and sleep apnea were significantly more insulin resistant than were 23 women with PCOS but not apnea (J. Clin. Endocrinol. Metab. 2008;93:3878-84). ■

**Disclosures:** Dr. Ehrmann reported having no relevant conflicts of interest.

For patients with  
type 2 diabetes whose  
blood glucose control  
is not on track  
with orals alone

**“YOU MAY WANT TO  
HAVE THE INSULIN  
TALK SOONER”**



**“By the time of diagnosis, up to 50% of patients’ beta-cell function may have been lost.”<sup>4</sup>**