CPAP improves sleeping glucose levels in type 2 diabetes patients with OSA

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A study in the Dec. 15 issue of the *Journal of Clinical Sleep Medicine* suggests that screening type 2 diabetes patients for obstructive sleep apnea (OSA) and treating those who have OSA with continuous positive airway pressure (CPAP) therapy could improve the management of their hyperglycemia and might favorably influence their long-term prognosis.

Results show that in a group of 20 type 2 diabetics who were mostly obese and were newly diagnosed with OSA, sleeping and nocturnal hyperglycemia were reduced and the sleeping interstitial glucose level was less variable during CPAP treatment. The average glucose level during sleep decreased by approximately 20 mg/dl after an average of 41 days of CPAP. The sleeping glucose also was more stable after treatment, with the median standard deviation decreasing from 20.0 to 13.0 and the mean difference between maximum and minimum values decreasing from 88 to 57.

According to Arthur Dawson, MD, senior consultant in the Division of Chest and Critical Care Medicine and co-director of research at Scripps Clinic Sleep Center in La Jolla, Calif., it is not surprising that many diabetics have sleep apnea since type 2 diabetes and OSA are both conditions that are becoming much more common because of the obesity epidemic.

Dawson said, "The low blood oxygen level and the arousals associated with an apneic event activate the sympathetic nervous system and cause the release of stress hormones, both of which tend to raise the blood

glucose. If we could prevent these apneic events with CPAP then we might keep the glucose level lower and more stable through the night."

According to the authors, population surveys, the Wisconsin Sleep Cohort and the Sleep Heart Health Study estimate the prevalence of type 2 diabetes in patients with OSA to be about 15 percent. OSA is associated with increased insulin resistance independent of obesity; 50 percent of patients with OSA have type 2 diabetes or impaired carbohydrate metabolism.

Twenty patients with type 2 diabetes who were on a stable diabetic regime were recruited at the time of their initial consultation with a sleep physician. All participants were newly diagnosed with moderate to severe OSA, and none had any previous experience with CPAP. Glucose level was monitored with a continuous glucose monitoring system (CGMS) over a period of 36 hours, which included a night in a sleep laboratory for evaluation by polysmnography. On the first night of the study, patients' OSA was untreated. A second night of glucose monitoring and sleep recording was done after the participants had been on CPAP therapy for a duration of one-to-three months. No changes were made in participants' diets or medication for diabetes throughout the study.

The authors report that previous studies have shown that variability of the glucose level increases the risk of eye complications and death in type 2 diabetics. Dawson said that the authors believe that recognizing and treating sleep apnea could improve the outlook for diabetics who also suffer from OSA. Researchers involved in this study theorized that by using the CGMS they were able to pick up short-term changes in the glucose level that would not be detected by traditional measurements.

Source: American Academy of Sleep Medicine