

## Podcast of the Journal of Clinical Sleep Medicine

Stuart F. Quan, M.D.

*Division of Sleep Medicine, Harvard Medical School, Boston, MA  
Editor, JCSM Journal of Clinical Sleep Medicine*

Welcome to the regular Podcast of the *Journal of Clinical Sleep Medicine*. I am Dr. Stuart Quan, Editor of the Journal. These Podcasts are a regular feature of each issue of the Journal and can be downloaded at the Journal's website. Each Podcast features summaries of important articles published in the current issue of the Journal, as well as occasional interviews with authors of these papers.

The lead article in this issue of the Journal is entitled, "Effects of Nocturnal Continuous Positive Airway Pressure In Patients With Resistant Hypertension and Obstructive Sleep Apnea," by Tarek Dernaika, Gary Kinasewitz, and Maroun Tawk from the University of Oklahoma Health Sciences Center in Oklahoma City, OK. In this study, 98 patients with obstructive sleep apnea and hypertension were treated with continuous positive airway pressure (CPAP). Subjects were then classified as either having resistant hypertension or controlled hypertension. The 42 patients with resistant hypertension used three or more anti-hypertensive drugs and had a daytime blood pressure of at least 140/90. After a follow-up period of 12 months, 71% of those patients in the resistant hypertensive group had a de-escalation of their anti-hypertensive treatment. However, there was no significant alteration in the anti-hypertensive regime in those patients who had controlled hypertension. Multivariate, regression analysis indicated that baseline blood pressure and diuretic therapy were independently associated with a decrease in mean arterial blood pressure after 12 months of CPAP use. Interestingly, the apnea-hypopnea index and CPAP use in hours were not associated with a decline in blood pressure. The authors suggest that long-term use of CPAP may be associated with an improvement in blood pressure control in those individuals with resistant hypertension.

In a commentary following this paper, Drs. Budhiraja and Quan point out that not all studies evaluating the impact of CPAP on hypertension have found a beneficial effect of this treatment. In addition, they note that it is unclear why individuals in the current study who had controlled hypertension did not benefit from CPAP therapy. They also observe that the study population was primarily male, that the data analysis was retrospective, and not prospective or randomized. They further note that baseline apnea-hypopnea index or the hours of CPAP compliance were not predictive of a decline in blood pressure. It is suggested that perhaps baseline hypoxemia may be a more robust indicator of disease severity than the apnea-hypopnea index. Nevertheless, it was felt that this study provided evi-

dence indicating that sleep apnea has significant cardiovascular effects and that CPAP might be beneficial in diminishing this impact. Further prospective studies were suggested.

Another study in this issue of the Journal is entitled, "Clinical Presentation of Obstructive Sleep Apnea In Patients With End-Stage Renal Disease," by Jaime Beecroft, Andreas Pieratos and Patrick Hanly from the Department of Medicine, University of Calgary in Alberta, Canada and the Department of Medicine, Humber River Regional Hospital, University of Toronto, Ontario, Canada. In this study, 76 chronic dialysis patients with obstructive sleep apnea were matched on the basis of apnea severity to 380 patients with obstructive sleep apnea who had normal renal function. All patients underwent polysomnography, completed a sleep history questionnaire, as well as the Epworth Sleepiness Scale. The authors found that those patients with end-stage renal disease had a lower body-mass index ( $28 \pm 5$  v.  $33 \pm 14$  kg/m<sup>2</sup>), were less likely to report snoring (80% v. 98%), have witnessed apnea (32% v. 58%), have unrefreshing sleep (55% v. 73%) and morning headaches (15% v. 27%). In addition, total sleep time and sleep efficiency were significantly less in those with end-stage renal disease. The end-stage renal disease group also had greater number of periodic limb movements ( $25.2 \pm 35.3$  v.  $11.5 \pm 21.5$ ). The authors concluded that patients with end-stage renal disease with sleep apnea may present in a different manner than patients without end-stage renal disease. Thus it is important that there be increased awareness of these differences so that sleep apnea is not under-recognized in this population.

The final article summarized on this podcast is entitled, "Improvement of Idiopathic Central Sleep Apnea With Zolpidem," by Syed Quadri, Christopher Drake, and David Hudgel from the Henry Ford Hospital, Section of Sleep Medicine & Research in Detroit, MI. This paper was a case series of all patients with idiopathic central sleep apnea diagnosed at the Henry Ford Sleep Disorders Clinic from January 1, 2004, through December 31, 2006. During this period of time, 20 patients were treated with zolpidem, 10 mg qhs. After an average follow-up of nine weeks, a follow-up polysomnogram showed that the overall apnea-hypopnea index decreased from  $30.0 \pm 18.1$  to  $13.5 \pm 13.3$ . In addition, the central apnea-hypopnea index decreased from  $26.0 \pm 17.2$  to  $7.1 \pm 11.8$ . No changes were observed in the obstructive apnea-hypopnea index or arterial oxygen saturation. Furthermore, the arousal index decreased with zolpidem use from  $24 \pm 11.6$  to  $15.1 \pm 7.7$ . Excessive daytime sleepiness,

as measured by the Epworth Sleepiness Scale, decreased from  $13.0 \pm 5.0$  to  $8.0 \pm 5.0$ . A significant improvement in the total sleep time and sleep efficiency were also observed. However, three individuals experienced a significant increase in obstructive events. The authors conclude that in this open label trial, zolpidem decreased central apnea events and improved sleep efficiency, as well as daytime sleepiness.

In a commentary which followed this paper, Dr. Shilpa Rahangdale noted that despite lack of statistical significance, seven out of the 20 subjects had an increase in their obstructive apnea-hypopnea index and that four out of these seven individuals had persistent moderate sleep apnea, even after treatment, with moderate sleep apnea being defined as an apnea-hypopnea index greater than 15 events/hour. It was also noted that piezoelectric

crystal thoracic and abdominal belts were used to quantify effort and that nasal-oral airflow was detected using a thermister. These methodological issues may have resulted in an underestimation of obstructive respiratory events. It was also noted that this was an under controlled case series with a lack of a placebo group and the study had low numbers. It was suggested that larger controlled trials will be needed before zolpidem can be recommended for treatment of idiopathic central sleep apnea.

This concludes the regular Podcast of the *Journal of Clinical Sleep Medicine*. The listener is encouraged to read the contents of the Journal for additional information regarding each of the papers summarized in this Podcast, as well as other papers published in this issue of the Journal.