

Podcast of the *Journal of Clinical Sleep Medicine*

Stuart F. Quan, M.D., F.A.A.S.M.

Division of Sleep Medicine, Harvard Medical School, Boston, MA
Editor, 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 first paper to be summarized in this podcast is entitled, "Obstructive Sleep Apnea and the Subsequent Risk of Depressive Disorder: A Population-Based Follow-Up Study," by Dr. Yi-Hua Chen from the School of Public Health, Sleep Disorders Center, Department of Physical Medicine & Rehabilitation, and the School of Healthcare Administration at Taipei Medical University, Taipei, Taiwan. Depression is highly prevalent in the community. It is generally thought that there is a strong linkage between obstructive sleep apnea and symptoms of depression. However, whether obstructive sleep apnea is a risk factor for the development of depression has not conclusively been demonstrated. In this study, the authors used data from a large database in Taipei, Taiwan. Using standard ICD9 coding, they identified 2,818 individuals who had the new diagnosis of obstructive sleep apnea between January 1, 2002, and December 31, 2008. They then performed a 5:1 match of individuals who did not have obstructive sleep apnea on the following characteristics, sex, age, urbanization level and year of the index date. This resulted in identification of 14,090 controls. The controls and the index cases were then followed for one year in the database to determine which individuals subsequently received the diagnosis of depression based on ICD9 codes. After adjustment for sex, age group, urbanization level and year of index data, the authors found that individuals with obstructive sleep apnea were 2.18 times more likely to develop depression. This risk was particularly evident in women who had an increased risk of 2.72 times versus their male counterparts whose risk was only 1.81 times control levels. The authors suggest that obstructive sleep apnea is a risk factor for the development of depression and that additional studies are indicated to determine the impact of obstructive sleep apnea treatment on subsequent risk of depression.

In an accompanying editorial, Dr. Patricia Haynes from the University of Arizona in Tucson, AZ, advocates that there should be a greater role for mental health professionals in sleep disorders centers because of the link between depression and obstructive sleep apnea and other sleep disorders.

The next study to be discussed in this podcast is entitled, "Obstructive Sleep Apnea after Weight Loss: A Clinical Trial

Comparing Gastric Bypass and Intensive Lifestyle Intervention," by Dr. Jan Magnus Fredheim and colleagues from the Morbid Obesity Center, Department of Medicine, Department of Otolaryngology Head & Neck Surgery, Vestfold Hospital Trust, Tonsberg, Norway, Institute of Clinical Medicine, Department of Biostatistics and Institute of Basic Medical Sciences, University of Oslo, Norway, and the Department of Cardiology, Akershus University Hospital, Lorenskog, Norway. There is an inextricable link between obstructive sleep apnea and weight. A great many patients who have obstructive sleep apnea are either overweight or morbidly obese. In addition, obesity is an epidemic in many developed countries, including the United States, and bariatric surgery is becoming increasingly popular as a way of treating obesity. However, there are relatively few studies comparing lifestyle intervention and dieting in comparison to bariatric surgery in the treatment of obstructive sleep apnea. In this study, 133 morbidly obese patients received either an intensive lifestyle intervention program for one year or underwent a Roux-En-Y bypass. The baseline apnea-hypopnea index in the lifestyle group was 21.8 per hour versus 29.3 per hour in the surgery group. The lifestyle intervention consisted of seven weeks of intermittent stays in a rehabilitation center consisting of organized physical activity, psychosocial oriented interventions and individual consultations with a physician, nutritionist, physiotherapist and a nurse. In addition, there were group sessions focusing on emotional aspects of sedentary behavior and classroom sessions on topics related to nutrition, physical activities and co-morbidities. At home, the patients were monitored every two weeks and the treatment aim was a greater than ten percent weight loss. After one year, the lifestyle group lost an average of 12.1 kg from a baseline weight of 127.4 kg and the bariatric surgery group lost 42 kg from a baseline of 145.5 kg. Remission of obstructive sleep apnea to an apnea-hypopnea index less than five events per hour was seen in 66% of the bariatric patients and 40% of the lifestyle intervention patients. After multivariate adjustment, the bariatric surgery patients had a greater odds of having remission of their obstructive sleep apnea than the patients undergoing intensive lifestyle intervention. Moreover, most of the increased odds of remission were related to weight loss rather than any effect of surgery or other factors. Although this study clearly demonstrates that in these individuals bariatric surgery appeared to increase the likelihood to increase the remission of obstructive sleep apnea, this was not a randomized, controlled clinical trial. Nevertheless, it further emphasizes that achievement of weight loss can greatly improve obstructive sleep apnea and should be pursued in all patients who are overweight.

The third study to be summarized in this podcast is entitled, "Evaluation of Drug-Induced Sleep Endoscopy as a Patient Selection Tool for Implanted Upper-Airway Stimulation for Obstructive Sleep Apnea," by Dr. Oliver M. Vanderveken and colleagues from the Department of ENT, Head & Neck Surgery, Antwerp University Hospital, Edegem, Antwerp, Belgium, Faculty of Medicine & Health Sciences, University of Antwerp, Antwerp, Belgium, Department of Otorhinology, Head & Neck Surgery, Sleep Disorders Center, Mannheim, Germany, ENT Department, Facial Plastic and Interventional Sleep Medicine, Kliniken St. Antonius, Wuppertal, Germany, Department of Otolaryngology Head & Neck Surgery, Wayne State University, Detroit, MI, Department of Surgery, John D. Dingel VA Medical Center, Detroit, MI, and Department of ENT Head & Neck Surgery, St. Lucas Hospital, Amsterdam, Netherlands. Drug-induced sleep endoscopy has been utilized by some as a way of trying to predict whether surgical procedures will be successful in the treatment of obstructive sleep apnea. In addition, there has been increased interest in development of upper airway stimulation devices for the treatment of obstructive sleep apnea. In this study, drug-induced sleep endoscopy was utilized to determine whether a therapeutic response could be obtained after implantable upper airway stimulation of the hypoglossal nerve for treatment of obstructive sleep apnea. In this study, 21 patients underwent implantation of the Inspire upper airway stimulation system. Prior to implantation, they had drug-induced sleep endoscopy performed under intravenous administration of midazolam and/or with propofol. Videos were recorded and subsequently analyzed to determine the relationship between findings on the drug-induced sleep endoscopy and subsequent change in the apnea-hypopnea index after implantation of the upper airway stimulation system. The overall apnea-hypopnea index before implantation of the upper-airway stimulation system was 38.5 events per hour and the body-mass index was 28 kg per metered square. The authors found that 16 patients did not have palatal complete concentric collapse. In these patients, the apnea-hypopnea index declined from 37.6 events per hour at baseline to 11.1 events per hour after implantation of the upper-airway stimulator. No other collapse pattern was found to be predictive of improvement. In the future, implantation of an upper airway stimulation device may prove to be effective in

treating some patients with obstructive sleep apnea. However, it will be important to determine which patients will respond to therapy. This study suggests that use of drug-induced sleep endoscopy may be one way to determine therapeutic success.

The final study to be summarized in this podcast is entitled, "Impact of Zaleplon on Continuous Positive Airway Pressure Therapy Compliance," by Dr. John G. Park and colleagues from the Center of Sleep Medicine, Division of Pulmonary & Critical Care Medicine, Mayo Clinic, Rochester, MN. The treatment for obstructive sleep apnea usually centers on the use of continuous positive airway pressure. When utilized by patients, CPAP is highly effective. However, at best, only two out of every three patients will utilize CPAP on a long-term basis. Thus, finding ways to improve adherence to CPAP is important. There is some data to suggest that individuals who sleep better on a CPAP titration study have better subsequent compliance when using CPAP on a long-term basis. In addition, a recent study showed that eszopiclone used in the first two weeks of CPAP therapy was associated with greater long-term compliance in comparison to a placebo. In this study, 134 patients undergoing a split-night polysomnogram for evaluation of obstructive sleep apnea were randomized either to placebo or the hypnotic zaleplon. The zaleplon dose was 10 mg. The patients were then prescribed CPAP and the impact of either zaleplon or placebo on the hours of CPAP usage and changes in the Functional Outcomes of Sleep Questionnaire and the Epworth Sleepiness Scale were determined. Patients receiving zaleplon used CPAP for 6.5 hours per day and those receiving placebo used it also for 6.5 hours per day. Furthermore, there were no differences in the Functional Outcomes in Sleep Questionnaire or the Epworth Sleepiness Scale between the two groups. Thus, it does not appear that zaleplon usage during CPAP titration improves subsequent CPAP adherence or functional outcomes. It remains to be determined whether routine use of a hypnotic during a CPAP titration should be a standard of care in the treatment of patients with obstructive 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 articles summarized in this podcast, as well as other papers published in this issue of the *Journal*.