

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, "The Influence of Race on the Severity of Sleep Disordered Breathing," by Dr. Paranathigeswaran and colleagues at the Sleep Disorders Center at Detroit Receiving Hospital, Division of Pulmonary, Critical Care & Sleep Medicine, Wayne State University School of Medicine and the Department of Family Medicine & Public Health Sciences, Wayne State University School of Medicine, Detroit, MI. It is well known that race may influence the presentation, prevalence and outcome of a number of chronic diseases. Previous studies have indicated that African Americans, especially those that are young, have an increased prevalence of sleep-disordered breathing or sleep apnea. This study attempted to determine whether race was an important factor in influencing the severity and mortality from obstructive sleep apnea. The authors analyzed the database of a sleep-disorders center between July, 1996, through February, 1999, for adult patients who had undergone a full-night polysomnogram and had an apnea-hypopnea index greater than equal to five. African American patients were compared to white patients with respect to the apnea-hypopnea index and mortality. They found that the African American patients had a higher apnea-hypopnea index, 32.7 events per hour, in comparison to white patients, 22.4 events per hour. Age, sex and body-mass index were found to be effect modifiers. After controlling for these latter factors, it was observed that African American men younger than 39 and those between 50 and 59 were found to have a higher apnea-hypopnea index than similarly aged white men. There was no influence of race in determining ultimate mortality. The authors suggest that African American race may be a significant factor in determining the severity of obstructive sleep apnea. In their discussion, the authors mention that this finding could be explained by differences in anatomy, ventilatory responsiveness to hypoxia or hypercapnia, as well as cultural issues. It should be noted, that this was a clinically derived population and may not be generalizable to the larger population at whole. In addition, potentially important risk factors, such as neck circumference, were not evaluated.

The next paper to be discussed is entitled, "Mandibular Advancement Splint as Short-Term Alternative Treatment in Pa-

tients with Obstructive Sleep Apnea Already Effectively Treated with Continuous Positive Airway Pressure," by Dr. Fernanda R. Almeida and colleagues from the University of British Columbia, Vancouver, Canada, Bon Secours Hospital, Tralee, Ireland, and Kyushu University, Japan. Many patients are reluctant to take their CPAP machines on vacations or other trips because they feel that the devices are a nuisance to transport. As a result, they frequently go without treatment during these trips. One alternative would be to offer them the use of mandibular advancement splints or oral appliances during these short periods of time so that they could avoid transporting their CPAP device. In this study, 22 patients who were previously documented to be adherent to CPAP therapy were invited to participate. They were then titrated with a mandibular advancement device until it was felt that they had adequate treatment for their sleep apnea. For the next three months, they were allowed to use either their CPAP device or the mandibular advancement device at their discretion. The average baseline apnea-hypopnea index was 30.7 events per hour. With the mandibular advancement device, this dropped to 13.2 events per hour. Furthermore, 14 patients had a more than 50% decrease in their apnea-hypopnea index. There was also no difference in their sleep apnea quality of life instrument measurements while on the mandibular advancement devices compared with CPAP. During the three month follow up period, when the patients could use either the CPAP or mandibular advancement device, more patients preferred using the mandibular advancement device than CPAP. Bed partners also preferred this treatment modality. However, perception of treatment efficacy slightly favored CPAP. At the end of the trial, 85% of the patients reported using the mandibular advancement device and 75% of them indicated that they would purchase one if the price was similar to the cost of CPAP. The authors conclude that both CPAP and mandibular advancement device can be used interchangeably and that the mandibular advancement device can be used as an alternative to CPAP when traveling, when electrical power is not available or when the patients feel that they do not wish to use CPAP. In an accompanying editorial, Dr. Wolfgang Schmidt Novara from the Sleep Lab & Clinic at the Dallas VA Medical Center in Dallas, TX, indicates that financial barriers to mandibular advancement devices are declining and that in less severe cases patient preference should be allowed to be an important factor in determining choice of therapy for patients with obstructive sleep apnea.

The final paper in this podcast is entitled, "Improved Neural Behavioral Performance during the Wake-Maintenance Zone,"

by Dr. Julia A. Shekelton and colleagues from the Division of Sleep Medicine, Department of Medicine, Brigham & Women's Hospital, and the Division of Sleep Medicine, Department of Medicine, Harvard Medical School, Boston, MA, and the School of Psychology & Psychiatry, Monash University, Melbourne, Australia. During the circadian cycle, there is a two to three hour window of reduced sleep propensity occurring immediately before the onset of the evening melatonin rise and thus occurring several hours prior to bedtime. This period of time has been called the wake-maintenance zone. There has been little previous research regarding neural behavioral performance during this period of time. This study investigated whether neural behavioral performance was improved during the wake-maintenance zone and whether there was any impact of sleep deprivation. The authors studied 31 adults who completed a protocol which included a baseline day of eight hours of sleep and 16 hours of wakefulness, and then an approximately 50 hour constant routine, with regular measurements of plasma melatonin and neural behavioral performance.

The latter consisted of psycho-modular vigilance tests, digit-substitution tests and ratings of subjective sleepiness. The authors found that neural behavioral performance was improved during the wake-maintenance zone in comparison to a similar period of time earlier in the biological day. In addition, the authors found that improvement in neural cognitive performance during the wake-maintenance zone was most prominent after extended wakefulness. The authors suggest that alignment of circadian phase may be important in affecting neural-cognitive performance. This may be especially important when homeostatic sleep pressure is high. Further, they speculate that the potential contribution of alertness during the wake-maintenance zone may be an important factor in sleep onset insomnia complaints and should be investigated further.

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*.