

Podcast of the *Journal of Clinical Sleep Medicine*

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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 discussed in this issue of the *Journal* is entitled, "Functional Outcomes In Patients With REM-related Obstructive Apnea Treated With Positive Airway Pressure Therapy," by Dr. Chen-San Su and colleagues from Chang Gung University College of Medicine, Kaohsiung, Taiwan, Chest Disease Institute, Nonthaburi, Thailand, and the Cleveland Clinic, Cleveland, OH. A current controversy related to treatment of obstructive sleep apnea is whether sleep apnea confined to REM sleep is associated with clinical symptoms and functional impairment. While some studies indicate that patients with REM-associated obstructive sleep apnea respond to therapy with CPAP, other studies have suggested that REM-predominant obstructive sleep apnea is not related to daytime sleepiness or functional impairment. The current study was a retrospective evaluation of consecutive patients having a diagnostic polysomnogram at the Cleveland Clinic Sleep Disorders Center over a two year period. REM-associated obstructive sleep apnea was defined as a ratio of the REM AHI divided by the non-REM AHI greater than two and the non-REM AHI being less than 15 events per hour of total sleep time. Patients with REM-related obstructive sleep apnea were then compared to patients with obstructive sleep apnea not restricted only to REM sleep. The sample consisted of 130 patients with REM-associated obstructive sleep apnea and 200 patients without REM-associated sleep apnea. Patients with REM OSA were more likely to be women, have a higher body-mass index and greater neck circumference. The authors found that when comparing the Epworth Sleepiness Scale, the Fatigue Severity Scale, the Patient Health Questionnaire and the Functional Outcomes of Sleep Questionnaire between the two groups, patients with REM-related obstructive sleep apnea and those with obstructive sleep apnea not confined to REM functional outcomes both improved, and there were no differences between the groups. Thus, these data would suggest that patients with REM-related obstructive sleep apnea will respond to CPAP therapy and their improvement in functional outcomes will be no different than those with sleep apnea not confined to REM. However, given that this is a retrospective series from a single center, the authors caution that prospective studies addressing

treatment outcomes for REM-related obstructive sleep apnea should be performed.

In an accompanying editorial, Dr. Babeck Mokhlesi from the University of Chicago, noted that there were several limitations to this study. First, the definition of REM-related obstructive sleep apnea was relatively permissive in that it allowed patients with a non-REM AHI of up to 15 events per hour to be classified as REM-related OSA. Thus, some patients with clinically significant obstructive sleep apnea in non-REM sleep were placed in the REM-related obstructive sleep apnea group. In addition, there was most likely some selection bias in that the REM-related obstructive sleep apnea patients were those that were most likely symptomatic and thus not representative of the larger populations of patients with REM-related OSA. In addition, Dr. Mokhlesi points out that it also would be important to determine whether those with REM-related OSA used their CPAP in the early morning hours when REM sleep was most prevalent. He also advocates that further studies are needed.

The next study to be discussed is entitled, "Risk of Obstructive Sleep Apnea Lower In Double-Reed Wind Musicians," by Dr. Christopher P. Ward and colleagues from the University of Houston-Clearlake, the Baylor College of Medicine in Houston, TX, and Stonehill College, Easton, MA. In the recent literature, there has been controversy as to whether stimulation or training of the upper airway muscles can affect the frequency and severity of obstructive sleep apnea. One study demonstrated that four months of practice on the didgeridoo reduced sleep apnea symptoms, suggesting that upper airway muscle training might be a treatment alternative for those with obstructive apnea. However, another study failed to show any difference between obstructive sleep apnea risk between wind musicians and non-wind musicians in an orchestra. Notably, there are differences in the physical demands of playing various wind instruments. In this study, an internet survey was conducted with active musicians. Respondents were surveyed regarding their personal health history, information concerning their musical instrument, the Epworth Sleepiness Scale and the Berlin Questionnaire to assess their risk of obstructive sleep apnea. Respondents were then stratified by the type of instrument played: double reed, single reed, high brass, low brass and non-wind. The authors found that musicians who played a double-reed instrument had a lower risk of obstructive sleep apnea in comparison to other musicians. In addition, double-reed musicians at low risk for obstructive sleep apnea played for longer periods of time than those with a high risk (16.5 ± 1.5 hours versus 9.1 ± 2.7 hours per week). These data suggest

that training of the upper airway muscles might decrease risk of obstructive sleep apnea but that the type of training is rather specific. As pointed out by the authors, for double-reed instruments, the musician makes a buzzing sound when placing his lips around the relatively small mouth piece. For single-reed instruments, an overbite is placed over a much larger mouth piece and for brass instruments the lips are brought together as if forming the sound of a letter “M”. Thus, different airway muscles are utilized for each class of instruments. Obviously, polysomnograms were not performed in these individuals and no physiologic data was obtained. Nevertheless, the data are intriguing and indicate that further studies should be performed.

The final study to be reviewed in this podcast is entitled, “Predictors Of Positive Airway Pressure Therapy Adherence In Children: A Prospective Study,” by Natalie DiFeo and colleagues from Children’s Hospital of Philadelphia and the University of Pennsylvania in Philadelphia, PA and the Department of Pediatrics, National Jewish Health, Denver, CO. Obstructive sleep apnea is increasingly recognized as a significant health problem in children, especially with the epidemic of obesity. Although adenotonsillectomy is generally the first line of therapy for these children, positive airway pressure is increasingly used in those in whom tonsillectomy cannot be performed or in whom tonsillectomy has not resulted in a resolution of the problem. However, there are few studies that have evaluated the factors that predict adherence to positive airway pressure therapy in children. In this study, consecutive children aged 2-16 years with polysomnographically diagnosed obstructive sleep apnea and who were naïve to positive airway pressure were studied as part of an ongoing clinical trial evaluating CPAP versus bi-level pressure release therapy. 69

children were eligible to be studied and data were ultimately collected in 56 of them. Mean use of positive airway pressure therapy was 22 nights per month and 78% of the children used it for more than 50% of the nights. However, the mean duration of nightly use was relatively low at only three hours per night. The greatest predictor of use was maternal education, with mothers having a college degree, averaging over four hours per night in their children versus only approximately one hour per night in those mothers having only some high school education. In addition, African-American children used positive airway pressure for fewer nights than other ethnic and racial groups. Adherence was not correlated with the severity of sleep-disordered breathing, PAP pressure levels or other demographic factors. These data indicate that overall, PAP adherence in children for obstructive sleep apnea is relatively low and that African-American children have the lowest adherence rates. Furthermore, greater educational achievement by the mothers predicts better adherence.

I would also call the listener’s attention to several other papers in this issue of the *Journal*. Dr. Madeline Grigg-Damberg reviews the status of the AASM scoring manual four years after its publication. Dr. Meir Krieger has special historical article describing the impact of Charles Dickens on medicine and society. Finally, I have written an editorial looking at the potential impact of the Supreme Court decision on the Affordable Care Act.

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*.