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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 highlighted in this podcast is entitled, "CPAP Pressure for Prediction of Oral Appliance Treatment Response in Obstructive Sleep Apnea," by Dr. Kate Sutherland and colleagues from Royal North Shore Hospital, Sydney Dental Hospital, Royal Prince Alfred Hospital, and the University of Sydney in Sydney, Australia. Use of oral appliances to treat obstructive sleep apnea is becoming increasingly common. Frequently, oral appliances are prescribed for patients who are intolerant or unwilling to use CPAP therapy for their sleep apnea. However it is sometimes difficult to predict which patients will respond to oral appliance therapy. In this study, the authors attempted to use therapeutic CPAP pressure to determine whether patients would respond to the use of an oral appliance. The investigators utilized participants who were previously enrolled in a randomized cross-over trial of one month of CPAP versus an oral appliance to evaluate the health effects of both therapies. Inclusion criteria were adults with an apnea-hypopnea index of greater than 10 per hour, two symptoms of obstructive sleep apnea and willingness to try both an oral appliance and CPAP. They analyzed 78 obstructive sleep apnea patients with a mean body-mass index of 29.1 who had moderate to severe obstructive sleep apnea with a mean apnea-hypopnea index of 30. The results of the study showed that therapeutic CPAP pressures were lower in patients who responded to the use of an oral appliance with a mean of 9.7 in responders versus 11.7 in non-responders. In addition, they found that a therapeutic CPAP pressure of 13 cm of water or lower discriminated patients who responded to an oral appliance versus those who were non-responders. It should be noted that this value is higher than the previous published value of 10.5 cm of water that was observed in a Japanese population. Although a prospective validation study needs to be performed, these results suggest that therapeutic CPAP pressures can be used to predict whether patients will respond to oral appliance therapy for the treatment of sleep apnea. However, the cut-off value appears to be different for Caucasians versus Asian populations.

The next paper to be reviewed in this podcast is entitled, "Prevalence and Clinical Significance of Supine-Dependent Obstructive Sleep Apnea in Patients Using Oral Appliance Therapy," by Dr. Marijke Dieltjens and colleagues from Antwerp University Hospital and the University of Antwerp, Antwerp, Belgium. The prevalence of supine-dependent obstructive sleep apnea in a general population is quite high, ranging from 20%-60% depending upon the criteria utilized to define supine dependency. As noted previously, oral appliances are increasingly used for the treatment of obstructive sleep apnea. Frequently, oral appliances are prescribed preferentially for individuals who exhibit supine-dependent sleep apnea. In this study, the authors attempted to determine the prevalence of supine-dependent obstructive sleep apnea, find the frequency at which non-supine dependent sleep apnea became supine dependent with oral appliance use, and assess whether supine dependency predicts treatment success with oral appliances. Patients in this study were 306 consecutive adults with obstructive sleep apnea who had received oral appliance therapy with a custom made titratable oral appliance. The authors found that using a definition of supine dependency that required the supine apnea-hypopnea index to be at least twice as high as the non-supine apnea-hypopnea index, the prevalence rate was 67.5% in their population. In contrast, using a definition that defines supine-dependent obstructive sleep apnea as an apnea-hypopnea index of less than five events in the non-supine position and a supine apnea-hypopnea index of at least twice as high in the non-supine position, the prevalence rate was 27%. After oral appliance therapy, using the more liberal definition, the prevalence rate of supine obstructive sleep apnea declined from 67.5% to 33.9%. Using the more restrictive definition, the prevalence rate declined from 27% to 17.5%. It was also noted that there were 110 patients who did not have an apnea-hypopnea index less than five events per hour after receiving an oral appliance. In 35% of these patients, the obstructive sleep apnea became supine dependent. Using the more restrictive definition, 37.5% of patients changed from non-supine dependent to supine dependent. In contrast to other studies, the authors did not find that supine dependency predicted a better response to oral appliance therapy. The authors conclude that a significant number of patients after receiving oral appliance therapy will change from non-supine dependent sleep apnea to supine-dependent sleep apnea. In addition, they could not confirm previous data suggesting that supine dependency predicted a better treatment response to oral appliance therapy. These findings suggest that use of positional therapy may be beneficial in some patients who have residual sleep apnea after using oral appliance therapy. Further studies need to be

performed to determine whether supine dependency predicts a better response to oral appliance therapy.

The final study to be reviewed in this podcast is entitled, "Cranial Contributiontion to Residual Obstructive Sleep Apnea after Adenotonsillectomy in Children: A Preliminary Study," by Dr. Keiko Maeda and colleagues from the Japan Somnology Center, Foundation of Sleep & Health Sciences, and Tokyo Medical University, Tokyo, Japan, and the School of Medicine, Fujita Health University and Takaoka Clinic, Aichi, Japan. The prevalence of obstructive sleep apnea in children has been reported to be between one and three percent. Adenotonsillectomy is generally the first-line treatment for children with obstructive sleep apnea. Increasingly however, it is recognized that many children have residual sleep apnea after having this surgery. This suggests that there are other factors that are operative in causing the sleep apnea in these children with residual disease. In this study, 13 children (nine boys and four girls) with a median age of 4.7 and a body-mass index Z score of -0.3 and who had undergone adenotonsillectomy were enrolled. Before adenotonsillectomy, the apnea-hypopnea index in these children was 12.3. This decreased to 3.0 after adenotonsillectomy and residual obstructive sleep apnea was seen in 11 of these 13 children. The apnea-hypopnea index after adenotonsillectomy in these children was 3.1. Cephalometry was performed in these children. In comparison to normative values in a Japanese population, the authors found that the mandible of these children was smaller. In addition, there was a significant negative correlation between maxillomandibular size and post adenotonsillectomy apnea-hypopnea index. These results indicate that, at least in this Asian population, residual obstructive sleep apnea after adenotonsillectomy may be attributable to mandibular deficiency. Thus measures to correct this may be therapeutic in these children. However, the listener should be cautioned about applying these findings to a North American population where increasing amounts of obesity may be a major reason why there is residual obstructive sleep apnea in children after adenotonsillectomy.

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*.