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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.

Insomnia is the most common sleep disorder in the general population. It is estimated that the prevalence of insomnia complaints is 30% and that 10% of the general population suffers from chronic insomnia. The most common therapeutic modalities for treatment of insomnia are use of various pharmacologic agents and cognitive behavioral therapy. The use of pharmacologic agents is associated with adverse side effects, development of tolerance and frequently the need for long-term use of a medication. Cognitive-behavioral therapy requires interaction with a trained therapist and its beneficial effects are not immediately evident. Therefore, a non-pharmacologic, simple to use treatment would be of some benefit to individuals suffering from insomnia. In this issue of the *Journal*, Krystal and colleagues report the results of a clinical trial in which vestibular stimulation was used in a four-hour, sleep phase advance model of transient insomnia. Earlier studies have reported that electrical stimulation of the vestibular system results in a rocking sensation, which has been found to improve sleep in individuals with neuromuscular breathing problems as well as in infants. In this study, one hour of continuous vestibular stimulation at bedtime was compared to sham stimulation in a four-hour, phase-advance protocol in normal sleepers. Normal subjects were screened by history and physical examination and also seven days of actigraphy to verify that they had a regular sleep pattern. They then underwent polysomnography to exclude other sleep disorders, including obstructive sleep apnea, which was then followed by a five-nap, multiple-sleep latency test. In order to continue in the study, subjects needed to have a mean sleep latency of greater than eight minutes on the multiple-sleep latency tests. Following a baseline polysomnogram night, each subject's bedtime was phase-advanced four hours from their usual bedtime and then they were randomized to receive either sham or vestibular stimulation for the first hour of the study night. Vestibular stimulation was performed using a transcutaneous electrical nerve stimulator positioned over the mastoid process. Stimulus intensity was varied between 100 and 500 microamps and the level used was the highest that was tolerated by the patient without discomfort.

The results showed that, overall, there was no difference in the latency to persistent sleep between those who received sham stimulation and those who received active treatment. However, a post-hoc analysis was performed in which only those who had an MSLT sleep latency of greater than or equal to 14 minutes were analyzed. In this sub-group analysis, there was a significant treatment effect in that those who received vestibular stimulation had a significant improvement in their latency to persistent sleep in comparison to the sham group. In general, the vestibular stimulation was well tolerated with the most common side effect being headache occurring in 12 subjects.

The authors indicate that these data provide some preliminary evidence that vestibular stimulation may shorten sleep-onset latency in a phase-advance model of transient insomnia but only in those with a baseline sleep latency of greater than or equal to 14 minutes. These data suggest that perhaps vestibular stimulation may be useful in clinical insomnia. However, the only significant findings were from a subset analysis, which needs to be confirmed on a prospective, randomized clinical trial. Furthermore, the subjects in this trial were not insomnia patients and it is unclear whether a similar effect would be found in those who have primary, clinical insomnia.

The next study to be highlighted in this issue of the *Journal* is entitled, "Treatment of Insomnia in Depressed Insomniacs: Effects on Health-Related Quality of Life, Objective and Self-Reported Sleep, and Depression," by McCall and colleagues. Severe depressive episodes and insomnia are frequently comorbid. Furthermore, insomnia symptoms may persist even after major depression has been treated successfully. Recent studies indicate that treatment of the insomnia along with treatment of the depression is beneficial for patients. However, the impact of insomnia treatment in the setting of depression with respect to changes in health-related quality of life have not been fully studied. In this study, 60 depressed insomniac patients were administered fluoxetine, followed either by eszopiclone (3mg) or placebo, for eight weeks. Health-related quality of life, self-reported sleep, polysomnography, actigraphy, and depression severity were assessed before and after treatment. Results of the study found that health-related quality of life was improved in the eszopiclone group in comparison to placebo. In addition, self-reported sleep quality was better in the eszopiclone group, and there was less wake after sleep onset at the end of treatment in the eszopiclone group compared with placebo. These results indicate that use of hypnotics in combination with anti-depressants for treatment of patients with major depressive

disorder improves both the quality of the patient's sleep as well as their health-related quality of life.

The next paper to be highlighted in this issue of the *Journal* is entitled, "REM-related Obstructive Sleep Apnea: The Effect of Body Position," by Dr. Oksenberg and colleagues. Obstructive sleep apnea observed only during REM sleep is commonly noted. In fact, a prevalence of as high as 34% has been reported in the general population. This study evaluates the impact of body posture on REM-related obstructive sleep apnea. The authors obtained data from 100 consecutive adult patients with newly diagnosed obstructive sleep apnea. Each of these patients had polysomnographic recordings and had greater than or equal to 10 minutes of REM sleep in both the supine and lateral positions. REM-related obstructive sleep apnea was defined as having a REM apnea-hypopnea index to non-REM, apnea-hypopnea index ratio of greater than or equal to two. Using this definition, 45% of the cohort under investigation was found to have REM-related obstructive sleep apnea. In this cohort, 79% were male with an average body-mass index of 29.3 (± 4.6kg/m^2). The overall apnea-hypopnea index was 25.3. Those with REM-related obstructive sleep apnea had a lower overall apnea-hypopnea index (16.3 ± 8.7) in comparison to those with non-REM related obstructive sleep apnea (32.6 ± 20.2). In addition, supine position had a detrimental effect on the apnea-hypopnea index in both REM-related and non-REM related obstructive sleep apnea patients. In both groups, the apnea-hypopnea index increased when the patient assumed the supine position. In contrast, the duration of the apnea or hypopnea episodes was not different in the supine position versus the lateral position and this lack of difference was present irrespective of whether the patient had primarily REM-related or non-REM related obstructive sleep apnea.

The final paper to be discussed in this podcast is entitled, "Diagnostic Accuracy of Split-Night Polysomnograms," by Dr. Khawaja and colleagues. Split-night polysomnograms are frequently performed in clinical sleep disorders laboratories to both make a diagnosis of obstructive sleep apnea and also to determine whether CPAP will be effective therapy. It is recommended that a split-night protocol is acceptable only when the apnea-hypopnea index during the diagnostic portion of the study is greater than 40 during a minimum of two hours of recording or, in some cases, greater than or equal to 20. However, use of these minimum thresholds excludes a number of patients from having a split-night protocol. In this study, full-night polysomnograms from 114 patients were analyzed to determine the relationship between the apnea-hypopnea index from the first two hours and first three hours of the night in comparison to the entire study. The authors found that there was a very high correlation between the apnea-hypopnea index or the respiratory-disturbance index when the full-night results were compared to both the two-hour and three-hour indices. In addition, the data were stratified by classifying subjects based on threshold apnea-hypopnea values of greater than or equal to five, 10 or 15. The authors found that for all three of these cut points, there were very high specificities exceeding 90% in all cases. The authors suggest that the apnea-hypopnea index from the first two or three hours of sleep is of sufficient diagnostic accuracy to rule in a diagnosis of obstructive sleep apnea even when this diagnosis is defined as an apnea-hypopnea index of greater than or equal to five. They further suggest that the currently recommended thresholds for split-night studies be revised to a lower number.

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*.