

## 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, "Periodic Leg Movements Are Associated with Reduced Sleep Quality in Older Men: The MrOS Sleep Study," by Dr. David M. Claman and colleagues from the University of California - San Francisco, San Francisco, CA, the Departments of Medicine, Brigham & Women's Hospital and Beth Israel Deaconess Medical Center, Boston, MA, San Francisco Coordinating Center and California-Pacific Medical Center Research Institute, San Francisco, CA, Departments of Psychiatry and Medicine, University of California, San Diego, CA, and the Department of Epidemiology, University of Pittsburgh, Pittsburgh, PA. Periodic limb movements in sleep are characterized by repetitive, stereotypic movements of the legs during sleep. However, it is unclear whether periodic leg movements produce symptoms of daytime sleepiness, or other symptoms related to poor sleep quality. If they do, then they are the cause of periodic leg movement disorder. In this report, investigators from the MrOS study, which is the Osteoporotic Fractures in Men study, analyzed their polysomnogram data to determine whether periodic leg movements of sleep were associated with abnormalities in sleep architecture and excessive daytime sleepiness or depression. As part of the MrOS study, in-home polysomnograms were performed in 2,872 older community-dwelling men, with a mean age of 76.4 years, during the 2003 and 2005 time period. In addition, participants completed the Epworth Sleepiness Scale, as well as the Geriatric Depression Scale. The authors found that periodic leg movements of sleep and periodic leg movements with sleep associated with arousals were highly prevalent. A periodic leg movement index greater than five per hour was observed in 70.8% of participants and a periodic leg movement index associated with arousal was noted in 27.4% of participants. In multivariate analyses, participants with a higher periodic leg movement with arousal index had significantly higher arousal indices, lower sleep efficiency, higher percentages of Stages I and II sleep, and lower percentages of Delta and REM sleep. In addition, an increased periodic leg movement index was associated with a higher arousal index, higher percentage of Stage II sleep, and lower percentages of Delta sleep. However, neither the periodic leg

movement arousal index nor the periodic leg movement index was associated with evidence of a higher Epworth Sleepiness Scale or Geriatric Depression Scale score. Therefore, these data indicate that periodic leg movements of sleep are associated with evidence of sleep fragmentation and lighter sleep. However, it does not appear that daytime symptoms of sleepiness or evidence of depression are higher in those with periodic leg movements of sleep. Nevertheless, future investigations are warranted to determine whether periodic leg movements of sleep are associated with daytime symptomatology, not only in elderly individuals but in all adults.

The next paper to be discussed in this podcast is entitled, "Prevalence and Symptoms of Occult Sleep Disordered Breathing among Older Veterans with Insomnia," by Dr. Constance Fung and colleagues from the Geriatric Research, Education and Clinical Center, Veteran's Administration Greater Los Angeles Healthcare System, Los Angeles, CA, David Geffen School of Medicine, University of California at Los Angeles, Los Angeles, CA, and Western University of Health Sciences. There is increasing evidence that both sleep-disordered breathing and insomnia have a high prevalence of comorbidity. In addition, it has been noted that veterans have a high prevalence of sleep complaints, including both insomnia and sleep-disordered breathing. However, it is unclear what the prevalence of the sleep-disordered breathing is within a population of veterans with complaints of insomnia. In this study, 435 veterans completed face-to-face and questionnaire assessments for demographics and sleep complaints. In addition, a single night, unattended, Watch PAT study was performed to determine the prevalence of sleep-disordered breathing. The authors found that the prevalence of an apnea-hypopnea index of greater than or equal to 15 was 46.7% in this group of patients with insomnia. An association was found between those with an apnea-hypopnea index greater than or equal to 15 and excessive daytime sleepiness. However, frequency and loudness of snoring or witnessed apneas were not associated with occult sleep-disordered breathing. In addition, sub-types of insomnia were also not related to the presence of sleep-disordered breathing. Therefore, these findings confirm in a population of veterans that sleep-disordered breathing is very prevalent in patients with insomnia. Furthermore, the presence of sleep-disordered breathing is associated with daytime sleepiness but not frequency and loudness of snoring or witnessed apneic episodes. Therefore, clinicians when treating patients with insomnia should consider whether there are any factors that would suggest sleep-disordered breathing, as well.

The final paper to be discussed in this podcast is “Air Leak during CPAP Titration as a Risk Factor for Central Apnea,” by Dr. Sydney Montesi and colleagues from the Sleep Disorders Research Program, Brigham and Women’s Hospital and Harvard Medical School, Boston, MA, Pulmonary and Critical Care Unit, Massachusetts General Hospital, Boston, MA, Phillips Respironics, Boston, MA, and the Division of Pulmonary and Critical Care Medicine, University of California - San Diego, San Diego, CA. Obstructive sleep apnea is a common, yet sometimes underdiagnosed, disorder. The best treatment for obstructive sleep apnea is the application of continuous positive airway pressure (CPAP). Recently, it has been observed that use and titration of CPAP results in the appearance of central apneic episodes. This condition has been termed complex sleep apnea. In this study, the authors wished to determine whether air leak observed during a CPAP titration was a risk factor for the development of central apnea. Data were obtained from 310 patients with obstructive sleep apnea who had undergone either a split-night or full-night CPAP titration study during the period of time from January to July of 2009. The subjects were divided into two groups. One group was observed to have a central apnea index, during the CPAP titration, of more than five events per hour and the other group was observed to have fewer than five events per hour. The groups were similar with respect to gender, age, body-mass index and overall apnea-hypopnea index. It was observed that the group with a low central apnea index had a median average air leak of 45.5 liters per minute during the titration.

In comparison, those with a high central apnea index had an air leak of 51 liters per minute. Furthermore, the maximum air leak in those with a high central apnea index was 75 liters per minute in comparison to those with a low central apnea index, which was 59.5 liters per minute. Thus, the authors concluded that leak during a CPAP titration is associated with the development of central apneas and may provide an explanation for the phenomenon of emergent central apnea during a CPAP titration. However, the authors freely admit that the mechanism behind why air leaks are associated with central apnea is unknown. They speculate that the air leak may produce a washout of the dead space within the CPAP interface, thus lowering the arterial PCO<sub>2</sub> and apneic threshold. Whether this actually is the explanation will remain the subject of future investigation.

In an accompanying editorial by Thomas J. Kuzniar, from the Division of Pulmonary and Critical Care Medicine, North Shore University Healthcare System in Evanston, IL, he suggests that the take-home, practical message from this investigation is the following. Technicians and physicians should pay close attention to the mask interface and air leak during a CPAP titration and try to resolve these leaks as a way of addressing the emergence of central apneic episodes.

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*.