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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 discussed in this podcast is entitled, "Sleep Apnea and Twenty-Year Follow Up for All-Cause Mortality, Stroke, and Cancer Incidence in the Busselton Health Study Cohort," by Dr. Nathaniel Marshall and colleagues from the NHMRC Centre for Integrated Research and Understanding of Sleep, Woolcock Institute of Medical Research, Sydney Nursing School, Department of Respiratory and Sleep Medicine, Royal Prince Alfred Hospital, Sydney, Australia, Western Australian Sleep Disorders Research Institute, and the School of Population Health, University of Western Australia, Perth, Australia. Although several studies have now indicated that sleep apnea is associated with increased cardiovascular and all-cause mortality, extended long-term follow up of population cohorts to date have not been available. In this report, the authors present the 20-year follow up of the Busselton Health Cohort, one of the first longitudinal cohorts to evaluate the cardiovascular and mortality consequences of obstructive sleep apnea. Originally, there were 400 residents of the Western Australian town of Busselton who underwent ambulatory sleep monitoring. Data was available from 397 of these individuals 20 years after their original assessment. After excluding four individuals who had a previous stroke, there were 77 deaths, 103 cardiovascular events and 125 incident cases of cancer in the 20-year follow up period. Results of the analyses showed that moderate to severe obstructive sleep apnea was significantly associated with all-cause mortality with a hazard ratio of 4.2, cancer mortality with a hazard ratio of 3.4, incident cancer with a hazard ratio of 2.5, and stroke with a hazard ratio of 3.7. However, obstructive sleep apnea was not significantly associated with cardiovascular disease with a hazard ratio of 1.9, or with coronary heart disease incidence with a hazard ratio of 1.3. For these latter two outcomes, the 95% confidence intervals encompassed one, indicating that the hazard ratios were not statistically significant. Interestingly, mild obstructive sleep apnea was associated with a reduction in mortality with a hazard ratio of 0.5, but no other outcomes were significant for mild sleep apnea. These data provide additional evidence that moderate to severe obstructive sleep apnea is associated with an increased risk of all-cause mortality, and stroke. In addition, it adds additional data to emerging evidence that cancer is associated with obstructive sleep apnea.

An editorial related to the paper by Marshall and colleagues was written by Drs. Richard Kim and Vishesh Kapur from the Division of Pulmonary & Critical Care Medicine at the University of Washington, Seattle, Washington. In their editorial, they emphasize that if the link between obstructive sleep apnea and cancer is validated, this has enormous healthcare implications. They observe that cancer was the second leading cause of death in the United States in 2010, with over 575,000 individuals affected, and this was second only to heart disease. Furthermore, medical costs related to cancer diagnosis and treatment were estimated to be $263.8 billion during the same period of time. Given that diagnosis and treatment of obstructive sleep apnea with CPAP is already cost effective, this brings up the possibility of significant health care cost savings for treatment of obstructive sleep apnea over and above what is already currently projected to be saved for reductions in cardiovascular disease and motor vehicle accidents.

The second paper to be discussed in this podcast is entitled, "Blood Pressure Improvement with Continuous Positive Airway Pressure is Independent of Obstructive Sleep Apnea Severity," by Dr. Jesse Bakker and colleagues from the Division of Sleep Medicine, Brigham & Women's Hospital and Harvard Medical School, Division of Translational Research, Beth Israel Deaconess Medical Center and Harvard Medical School, Pulmonary & Critical Care Unit, Massachusetts General Hospital, Boston, MA, Research Department Sleep Division Araba University, Basque Country University Vitoria, Spain, Hospital Arno de Villanova, IRB Lleida Respiratory Department, Lleida, Spain, and CIBERes, Madrid, Spain. In this study, the authors performed a patient-level meta-analysis, using individual patient data from eight randomized, controlled trials of the impact of obstructive sleep apnea on blood pressure. 968 subjects were included, for which there were comparisons between therapeutic positive airway pressure versus sham positive airway pressure, pill placebo or standard care for at least one week. The authors found that the mean reductions in blood pressure between therapeutic positive airway pressure and non-therapeutic treatment were 2.27 mm of mercury for systolic pressure and 1.78 mm of mercury for diastolic blood pressure. The presence of uncontrolled hypertension was associated with greater reductions in blood pressure on the order of 7.1 mm of mercury for systolic blood pressure and 4.3 mm of mercury for diastolic blood pressure. In addition, there was no impact of severity of underlying obstructive sleep apnea. These data

provide additional evidence that treatment of obstructive sleep apnea can lower, to a small degree, blood pressure in patients with hypertension. Furthermore, the greatest effect may be in those who have uncontrolled hypertension at the time of administration of positive airway pressure.

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*.