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Session: B99 The Best of Everything: Hot Topics in Sleep

Monday, May 16, 2016, 4 p.m.–4:15 p.m.

Location: Room 2001/2003 (West Building, Level 2), MOSCONE CENTER

**In Large Study, Sleep Apnea Associated With Heart Attack, Stroke, and Other Serious Outcomes After Coronary Revascularization**

ATS 2016, SAN FRANCISCO— In an ongoing prospective study involving 1,311 patients from five nations, researchers found that untreated obstructive sleep apnea (OSA) was associated with increased risk of a Major Adverse Cardiac and Cerebrovascular Event (MACCE) -- cardiovascular death, non-fatal myocardial infarction (heart attack), non-fatal stroke, and unplanned revascularization such as heart bypass surgery and angioplasty. The new research, from the Sleep and Stent Study, was presented at the ATS 2016 International Conference.

“Patients with OSA in this study were found to have 1.57 times the risk of other patients of incurring an MACCE at a median follow-up of nearly two years,” said Principal Investigator Lee Chi-Hang, MBBS, MD, FCRP (Edin), FACC, FSCAI, of the National University Heart Centre, Singapore. “This held true after adjusting for other variables including age, sex, ethnicity, body mass index, diabetes and hypertension.”

The study included patients from Singapore, China and Hong Kong, India, Myanmar, and Brazil who had undergone a common artery-widening procedure known as a percutaneous coronary intervention (PCI). Within seven days of undergoing the PCI, all patients in the study participated in an in-hospital sleep study, using a portable diagnostic device. The sleep studies were manually scored by a committee directed by a sleep physician and Registered Polysomnographic Technologist, both of whom were blinded to the demographic and clinical characteristics of study subjects. The reported MACCEs, along with source documents, were judged by a clinical event committee.

The prevalence of OSA was 45.3%. Although the purpose of the study was to analyze outcomes in untreated OSA patients, patients were still allowed to seek treatment. Dr. Lee was able to

determine that only 1.3% of patients in the study diagnosed with OSA were on regular CPAP therapy at the end of the study. A majority of the 1,311 patients had state-of-the-art drug-eluting stents implanted.

“As OSA is highly prevalent and has a prognostic implication in patients with coronary artery disease, we recommend that all patients scheduled for a PCI be routinely screened for OSA, just as they would be for diabetes mellitus, hypertension and hyperlipidemia,” said Dr. Lee. “This screening is now more feasible with the advent of reliable portable devices like those used in our study.”

Dr. Lee added, “Since a vast majority of patients were not on CPAP therapy, our findings highlight that there is a significant gap between medical knowledge and clinical practice in the management of OSA. This should receive serious examination.”

Dr. Lee and colleagues plan continued follow up with study participants to secure long-term outcome data.

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Abstract 4363

Obstructive Sleep Apnea and Cardiovascular Events After Percutaneous Coronary Intervention

Type: Scientific Abstract

Category: 29. Sleep Disorder Breathing (Adult)/Cardiovascular Outcomes/Behavioral Science/Health Services Research

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### Abstract Body

**Background:** There is a paucity of data from large cohort studies examining the prognostic significance of obstructive sleep apnea (OSA) in patients with coronary artery disease. We hypothesized that OSA predicts subsequent major adverse cardiac and cerebrovascular events (MACCEs) in patients undergoing percutaneous coronary intervention (PCI).

**Methods:** The Sleep and Stent Study was a prospective, multicenter registry of patients successfully treated with PCI in five countries. Between December 2011 and April 2014, 1748 eligible patients were prospectively enrolled. The 1311 patients who completed a sleep study using a level III portable diagnostic device within seven days of PCI formed the cohort for this analysis. The tracings were manually scored by a sleep study scoring committee directed by a sleep physician and Registered Polysomnographic Technologist, both of whom were blinded to the demographic and clinical characteristics of the recruited patients. The reported MACCEs,

along with the submitted source documents, were adjudicated by a clinical event committee.

**Results:** Patients' mean body mass index was  $25.7 \pm 3.7 \text{ kg/m}^2$ . Their rates of overweight (body mass index 25–30  $\text{kg/m}^2$ ) and obesity ( $> 30 \text{ kg/m}^2$ ) were 42% and 13%, respectively. Drug-eluting stents were implanted in 80.1% of these patients. OSA, defined as an apnea-hypopnea index 15 events per hour, was found in 45.3%. The left ventricular ejection fraction based on echocardiography was  $53.4 \pm 10.6\%$  and  $54.0 \pm 10.4\%$  for the OSA and non-OSA groups, respectively ( $p = 0.427$ ). MACCE, a composite of cardiovascular mortality, non-fatal myocardial infarction, non-fatal stroke, and unplanned revascularization, occurred in 141 (10.8%) patients during the median follow-up of 1.9 years (interquartile range = 1.5–2.3 years). These included cardiovascular death in 24 patients (1.8%), non-fatal myocardial infarction in 52 (4.0%), non-fatal stroke in 20 (1.5%), and unplanned revascularization in 92 (7.0%). The crude incidence of an MACCE was higher in the OSA than non-OSA group (13.6% versus 8.4%;  $p = 0.002$ ). Multivariate Cox regression analysis showed OSA to be an independent predictor of an MACCE, with an adjusted hazard ratio of 1.57 (95% confidence interval = 1.10 to 2.24,  $P = 0.013$ ), independent of age, sex, ethnicity, body mass index, diabetes mellitus, and hypertension. The results were not materially changed after further adjustment for indications for PCI, culprit vessel, lesion location, and coronary devices used.

**Conclusions:** OSA is independently associated with a future MACCE in patients undergoing PCI. Future studies to evaluate therapeutic approaches to mitigate OSA-associated risk are warranted.