NAMS Regional Symposium on Sleep Medicine
Speaker ***: Dr. V.K. Vijayan***

CO-MORBIDITIES ASSOCIATED WITH OBSTRUCTIVE SLEEP APNEA

SYNOPSIS

Obstructive sleep apnea (OSA) has been shown to increase the risk for systemic hypertension, pulmonary vascular disease, ischemic heart disease, cerebral vascular disease, congestive heart failure and arrhythmias. However, a causal relationship is difficult to establish as many risk factors of OSA are also known risk factors of cardiovascular diseases. Several studies have shown that OSA increases the relative risk of hypertension independent of other confounding factors. The Wisconsin sleep cohort study had demonstrated a dose-response association between sleep disordered breathing at baseline and the presence of hypertension four years later and this was independent of known confounding factors. Sleep Heart Health Study (SHHS) in a cross sectional analysis of > 6000 patients has shown a linear relationship between systolic and diastolic blood pressure and OSA severity. In another prospective study of 2470 participants of SHHS aged > 40 years without baseline hypertension and not on antihypertensive medication, it has been shown that there is a significant relationship between the risk of developing hypertension and OSA. However, this association was lost after adjustment for BMI. In a longitudinal study in the general population (Victoria Sleep Cohort) involving 2148 subjects and with a 7.5-year follow up, there is no suggestion of an association between OSA and incident systemic hypertension in the middle aged general population. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC-VII) lists sleep apnea as a significant cause of secondary hypertension. Case series studies mainly in male patients have suggested that the prevalence of pulmonary hypertension in OSA varies from 17 to 53%. However, there are no population based data to know the prevalence of pulmonary hypertension in OSA. The prevalence of cardiac arrhythmias from the Sleep Heart Health study showed that severe OSA had higher rates of atrial fibrillation, non-sustained ventricular tachycardia and complex ventricular ectopy. Observational studies had shown that severe obstructive sleep apnea-hypopnea significantly increased the risk of fatal and non-fatal

cardiovascular events in both men and women and CPAP treatment reduced this risk. The Framingham study had shown that increasing BMI is directly correlated with incident heart failure and may be mediated in part by OSA. There are evidences suggesting that OSA is independently associated with metabolic syndrome. The Wisconsin Sleep Cohort had demonstrated that moderate to severe sleep-disordered breathing is a risk factor for prevalent stroke. It has been observed that sleep capnea occurs frequently after stroke and CPAP treatment has been found to improve neurological recovery after stroke. It has been reported that there is a high prevalence of erectile dysfunction in OSA patients. It was observed that abdominal aortic aneurysm is highly prevalent in OSA and there was further expansion of abdominal aortic aneurysm in patients with severe OSA. Sleep-disordered breathing was also found to be associated with deep vein thrombosis and pulmonary embolism in female patients with OSA and this association was independent of established risk factors for thrombosis. Neurocognitive consequences of OSA include daytime sleepiness, loss of alertness, memory deficit, reduced vigilance, impaired executive function, psychomotor speed deficits, increased risk for automobile and occupational accidents and decreased quality of life.

SUGGESTED READING

1. American Heart Association/American College of Cardiology Foundation Scientific Statement: Sleep apnea and cardiovascular disease. *Circulation* 2008; **118**:1080-1111.
2. Vijayan VK (2012). Morbidities associated with obstructive sleep apnea. *Expert Rev Respir Med.* **6**:557-66.
3. Lam JCM, Mak JCW and Ip MS (2012). Obesity, obstructive sleep apnea and metabolic syndrome. *Respirology* **17**: 223–236.