Effects of Obstructive Sleep Apnea on Cardiac Sympathetic Drive during Sleep in Patients after Myocardial Infarction

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Observational data suggest sudden cardiac death is more likely to occur during sleep in patients with obstructive sleep apnea (OSA). Sleep-related autonomic abnormalities may be implicated. We hypothesized that the presence of OSA is associated with increased cardiac sympathetic drive during sleep in patients after myocardial infarction (MI). We conducted a cross-sectional study of patients (n=40) within 1 to 3 months after MI. The presence of OSA was determined by polysomnography. Spectral analysis was performed 5-minute periods of stable ventilation during both REM sleep and non-REM sleep (stage 3 and 4). The LF/HF ratio was calculated to reflect sympathovagal balance. Mean age of study participants was 58 ±10 years, 83% were men and 95% were taking β-blockers. OSA was present in 60% of the patients. The LF/HF ratio was higher in patients with OSA during both non-REM (6.5±7.6 vs. 2.7±1.8, p=0.02) and REM sleep (6.4±5.4 vs. 3.9±3.3, p=0.03). OSA is accompanied by an altered cardiac sympathovagal balance favoring heightened sympathetic drive during both non-REM and REM sleep in patients after MI. This might contribute to the increased risk of sudden cardiac death during sleep in patients with OSA, and may be associated with poorer prognosis in this patient population.

Keywords: heart rate variability, obstructive sleep apnea, myocardial infarction