Obstructive sleep apnea (OSA) is common among cardiac patients and associated with serious cardiovascular complications, including cardiac arrhythmias and sudden cardiac death. OSA is characterized by repeated obstruction of the upper airway, resulting in intermittent oxygen desaturation during sleep and transient repetitive arousal from sleep. Inspiratory effort against the airway obstruction causes an increase in left ventricular wall stress. Frequent episodes of hypoxemia have been associated with increased sympathetic activity, endothelial dysfunction and systemic inflammation. Epidemiologic observations indicated that OSA is associated with atrial fibrillation (AF) and is an increased risk for development of AF in individuals <65 years of age. Patients with OSA have a peak in sudden cardiac death during sleeping hours, when peoples without OSA show a nadir. Majority of cardiac patients with moderate-to-severe OSA, however, remain undiagnosed. This is due mainly to cost and inconvenience of the standard diagnosis of sleep apnea by polysomnographic examination. Each episode of sleep apnea is accompanied by bradycardia followed by abrupt tachycardia upon its cessation, resulting in a characteristic heart rate pattern, called cyclic variation of heart rate (CVHR). Recently, we developed an algorithm, named autocorrelated wave detection with adaptive threshold (ACAT) for detecting CVHR from Holter ECG recording during sleep. ACAT may provide a powerful screening tool for sleep apnea among cardiac patients and CVHR may be a new index in routine Holter ECG examinations for cardiac arrhythmias.

**Keywords:** sleep apnea, heart rate variability