

Influence of Obstructive Sleep Apnea on Nocturnal Ventricular Arrhythmias in Patients with Automatic Implantable Cardioverter Defibrillators

Khalid Atalla, Tawfiq Zeidan Shwiri, Ibrahim Marai, Mahmoud Suleiman, Miry Blich,
Monther Boulos

Cardiology Department, Clinical Electrophysiology, Rambam Medical Center, Haifa, Israel

Background: Patients with implantable cardioverter defibrillators (ICDs) continue to suffer from ventricular arrhythmias that are associated with significant morbidity. Obstructive sleep apnea (OSA) results in recurrent intermittent hypoxia and sympathetic nervous system activity surges which provide the milieu for cardiac arrhythmia development. We postulate that the prevalence of nocturnal clinically significant ventricular arrhythmias is higher among patients with automated implantable cardioverter defibrillators (AICD) and OSA.

Methods: We prospectively studied 21 patients with AICD. The presence of OSA was determined by overnight polysomnography. Obstructive apneas and hypopneas were classified according to standard criteria. An apnea-hypopnea index (AHI) >10 established the diagnosis of OSA. ICD interrogation was used to determine the type and time of onset of clinically significant ventricular arrhythmia (non-sustained VT, sustained VT and VF) in each patient.

Results: Using the threshold of AHI >10 events/h, OSA was present in 13 patients (61.9%). There was a trend toward higher episodes of ventricular arrhythmias in patients with OSA (mean 1.6 ± 1.7 vs. 0.6 ± 1.2 per patient, $P = 0.09$). However, the higher number of ventricular arrhythmias in patients with OSA was solely due to a significant increase in ventricular arrhythmias occurring between midnight and 6 AM (0.8 ± 1.0 vs. 0.3 ± 0.7 , $P=0.04$).

Conclusion: The results of this small study indicate that patients with OSA have a higher frequency of clinically relevant ventricular arrhythmias during the night.