Cardiac Implantable Electronic Devices for the Management of Heart Failure

Chun-Chieh Wang, M.D.

Section of Cardiology, Department of Medicine, Chang Gung Memorial Hospital & University, Taoyuan, Taiwan.

Since the first clinical use of implantable cardioverter-defibrillator (ICD) almost three decades ago, the technology and the function of ICD have considerably improved. ICD therapy has been established as the most effective method for primary and secondary prevention of sudden cardiac death (SCD) in heart failure (HF) patients.

A sizable percentage of patients who have a history of myocardial infarction are shown to have depressed left ventricular function and HF. Many of these patients are at significantly higher risk of developing ventricular arrhythmias and SCD and are candidates for receiving a primary or secondary prevention strategy with an ICD. An ICD is indicated in HF patients following cardiac arrest without reversible causes or unexplained syncope with inducible ventricular arrhythmias. Selected patients (> 40 days after myocardial infarction) with a left ventricular ejection fraction ≤ 35% are candidates for ICD implantation as the primary prevention of SCD. The benefits of ICD therapy as the primary prevention of SCD are at least as good as those of secondary prevention, as shown in the results of different prospective, randomized controlled trials.

In addition, cardiac resynchronization therapy with or without defibrillator (CRT-D) backup improves intraventricular conduction delay, left ventricular mechanical dyssynchrony, HF symptoms, exercise capacity, and survival in patients with advanced HF. HF patients with left ventricular ejection fraction ≤ 35% and wide QRS complexes, especially left bundle branch block, who continue to have symptoms despite optimal medical therapy are candidates for CRT-D to improve morbidity and mortality.

We will discuss the latest development of cardiac implantable electronic devices for the management of HF in the presentation.