Overdrive Pacing to Prevent Ventricular Tachycardia in Patient with Cardiac Amyloidosis: a Case Report

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Introduction: Sudden death has been shown to be one of the most common cause of death in cardiac amyloidosis. However, implantation of implantable cardiac defibrillator (ICD) for prevention of sudden death in cardiac amyloidosis is uncertain. We reported implantation of permanent pacemaker with overdrive ventricular pacing in bradyarrhythmia cardiac amyloidosis with history of ventricular tachycardia (VT).

Methods: A 57 years old man was scheduled for implantation of permanent pacemaker. He had history of syncope and was diagnosed with suggestive of cardiac amyloidosis with non-sustained VT 2 weeks ago. He had hemodialysis since 1 years ago. The ECG showed heart rate 52x/m, Qtc 490 ms and frequent premature atrial contraction. Echocardiography showed dilated left atrium, concentric hypertrophy with septal thickness 15 mm, preserved LVEF without left ventricular outflow tract obstruction and features of relative apical sparing on deformation-based parameter. A permanent pacemaker were placed in mid septum right ventricle with single chamber mode, lower rate 60 bpm, upper rate 130 bpm. The night after implantation, the monitor captured episode of non-sustained VT. Therefore, we decided to overdrive pacing into 80 bpm, then 90 bpm. He also got antiarrhythmic drugs, such as amiodarone and bisoprolol. The patient died 24 hours after discharge from the hospital.

Result: Sudden death are being the main causes of death in cardiac amyloidosis. Recorded VT is the marker late stage of cardiac amyloidosis and the mortality was high. Sudden deaths were mostly associated with terminal bradycardia followed shortly by pulseless electrical activity. Implantation of ICD for prevention of sudden death is uncertain and many deaths in patients with cardiac amyloidosis do not appear to be preventable by an ICD. Overdrive cardiac pacing was used for many years to prevent ventricular tachycardia and needed due to a high prevalence of conduction disease to prevent syncope. However pacemaker may not prevent sudden death because this is thought be often due to electromechanical dissociation.

Conclusion: Overdrive cardiac pacing can be alternative choice for prevention of ventricular arrhythmia and also have beneficial effects to prevent syncope in cardiac amyloidosis but still did not reduce mortality. Further studies would be useful to explore these findings in more detail.