Novel strategy for patients who have high risk of sudden cardiac death and need pacing function ~Dual device (the pacemaker and the S-ICD) management~.

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Introduction: Despite the widespread use of transvenous implantable cardioverter-defibrillators (TV-ICDs) in clinical practice, concerns exist regarding ICD lead durability. Subcutaneous implantable cardioverter-defibrillator (S-ICD) has been available since February 2016 in Japan. In the real world, we have a dilemma that bradycardia pacing is required in patients with an indication for S-ICD. We investigated cases in which we underwent both S-ICD and pacemaker (PM) implantation in our institute. We evaluated safety and efficacy of the dual device.

Methods: Between February 2016 and November 2018 in our institute, we retrospectively identified consecutive 55 patients received S-ICD. Of these patients, we analyzed 11 patients (20%) who was implanted not only S-ICD but also pacemaker.

Result: The age of 11 patients was 49.6 ± 17.1 years old, and 83% of them were male. The most common reason of dual device management was breaking of shock lead of TV-ICD (6 cases, 55%). These 6 patients needed atrial pacing, so TV-ICD was downgraded to AAI-PM and atrial lead continued to be used. There were two cases in which PM became necessary after SICD implantation. In one case, leadless pacemaker was implanted. In the other case, DDD-PMI using myocardial electrodes was performed with tricuspid valve replacement. Both of them were carried out with a strategy that did not use transvenous lead. Sensing vector did not change post PMI. There was one case in which VF was detected after DDD-PMI, so SICD was selected because of post cardiac surgery. A rare case was concurrent implantation of VVI-pacemaker on the right side, and S-ICD on the left side for occupational reason and concerns about High-DFT of placing TV-ICD on the right side. As a valuable case, a transvenous shock lead placed subcutaneously at 6 years of age and followed for 10 years was switched to double-device consisting of a pacemaker with a myocardial electrode and S-ICD. These cases did not occur oversensing due to pacing pulse and interaction between S-ICD with DDD or VVI pacemaker. Inappropriate shock was occurred only one case for noise due to over sensing of myopotential. The problem was solved by changing another sensing vector.

Conclusion: Dual device management is novel optional strategy for patients who require bradycardia pacing with an indication for S-ICD.