Long-term stability of atrial sensing provided by floating atrial dipole in single-lead implantable cardioverter defibrillator

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Introduction: The recently introduced single-chamber implantable cardioverter defibrillators (ICDs) equipped with a floating atrial dipole (DX system) for single-lead atrial sensing have been proved reliable for arrhythmia discrimination and atrial fibrillation monitoring. Data on stability of atrial sensing amplitude during long-term follow-up have not been reported. Our aim was to retrospectively evaluate the long-term stability of atrial sensing amplitude of the single-lead ICD provided with a floating atrial dipole.

Methods: Data were retrieved by a remote monitoring system characterized by daily transmissions. The endpoint of the analysis was the evaluation of P-wave sensing stability by comparing mean values of the first 10 days post-implant with corresponding values yearly collected for the subsequent 5 years.

Result: In our cohort, 104 ICD DX recipients (82.7% male, median age 58 interquartile (IQ) interval: 52-63) were included, 88 had data at 1-year follow up, 60 at 2 years, 41 at 3 years, 29 at 4 years, and 13 at 5 years. Overall atrial sensing amplitude average was 4.7 mV (2.6-6.8) for the whole follow up period available. The median values of P-wave amplitude measured for each year did not show statistically significant differences until 5-year follow up at a random intercept linear mixed model (p=0.401). Median values were respectively, 3.6 mV (1.5-5.8) at implantation, 4.4 mV (2.3-6.8) at 1-year, 4.2 mV (1.6-6.7) at 2-year, 4.3 mV (1.7-5.8) at 3-year, 4.7 mV (2.1- 6.9) at 4-year and 4 mV (2.25-5.9) at 5-year.

Conclusion: The single-lead ICD system equipped with floating dipole showed to provide reliable atrial sensing at long term with no significant reductions until 5-year follow up.