Anti-tachycardia pacing therapies for fast ventricular arrhythmias: results from the international randomized ADVANCE III Trial.

Maurizio Gasparini
Alessandro Proclemer
Axel Kloppe
Maurizio Lunati
José Bautista Martinez Ferrer
Ahmed Hersi
Marcin Gulaj
Maurits C.E.F. Wijffels
Andrea Grammatico
Lorenza Mangoni di Santo Stefano
Laura Manotta
Angel Arenal

Introduction: The purpose of this retrospective analysis was to assess efficacy of anti-tachycardia pacing (ATP) therapies to terminate fast arrhythmic episodes avoiding unnecessary shocks in patients implanted with an Implantable Cardioverter Defibrillator (ICD).

Methods: the ADVANCE III trial enrolled 1902 patients with standard ICD or cardiac resynchronization therapy (CRTD) indications between 2008 and 2010 in 94 centers in Europe, Middle East, south Africa and Russia. Patients were randomized to be programmed with a number of intervals to detect (NID) 30/40 or 18/24. Devices in both arms were programmed with ATP During Charging before shocks for episodes with 200ms ≤ Cycle Length (CL) ≤ 320ms and shock only for episodes with CL < 200ms. Secondary prevention was indication for 25% of the cases. All arrhythmic episodes were reviewed by an independent blinded committee. GEE adjusted analysis has been performed to account for patients with multiple episodes.

Result: During a mean follow up of 12 months, 346 episodes with mean CL between 320ms and 200ms received at least an ATP in 169 patients. Details on overall ATP efficacy based on CL are shown in table 1. In 48.5% and 67.8% of the episodes with 200ms ≤ CL ≤ 280ms and 290ms ≤ CL ≤ 320ms, an unnecessary shock was avoided by programming ATP during charging. ATP efficacy is comparable with historically published data for arrhythmias with mean CL between 290 ms and 320 ms even when used after a long detection. When considering fast/very fast arrhythmias (episodes with mean CL between 280 ms and 200 ms), ATP was successful in terminating the arrhythmia in 85 cases (48.5%) (60 (54.3%) episodes in 34 patients in the 18/24 arm and 25 (38.5%) episodes in 22 patients in the 30/40 arm).

Conclusion: In the multicentre, international, randomized ADVANCE III Trial, ATP were effective for sustained ventricular arrhythmia even with very fast cycle lengths, decreasing the number of unnecessary shocks. Therefore, ATP should be preferred as first-line therapy in ICD patients.