Contents lists available at ScienceDirect

Indian Pacing and Electrophysiology Journal

journal homepage: www.elsevier.com/locate/IPEJ

Programming an ICD: It's time to change the defaults

In this edition of the journal, Boles et al. report on the inappropriate and appropriate therapy rates among 250 patients (200 for secondary prevention, 50 for primary prevention) who received a dual chamber ICD or a CRTD [1]. The devices were programmed as follows: VT1 zone = 170—200 bpm (for primary prevention), or VTCL − 20 ms (secondary prevention), VT 2 zone = 200—250 bpm, VF zone = > 250 bpm. This is comparable to the recommendations in the 2015 HRS/EHRA/APHRS/SOLAECE Expert Consensus Statement on Optimal Implantable Cardioverter-Defibrillator Programming and Testing which advocate the slowest tachycardia rate to be 188 bpm for primary prevention, and VTCL-10 bpm for secondary prevention [2]. The NID of 28—30 beats is also very similar to the 2015 recommendation of 30 beats, and is comparable to the NID used in the PREPARE, RELEVANT, ADVANCE III and PROVIDE studies [3—6]. The time to detect (in devices from Boston Scientific) used in this study was shorter than the 30 second time delay advocated by the 2015 Consensus; the number of Boston Scientific devices in this study, though, were limited. Among the SVT-VT discriminators, the authors have suggested that the onset and stability criteria be turned off. It would make sense to retain these criteria as "ON" in patients with AV block, or poor AV nodal conduction. The authors have used up to 6 bursts of ATP in the VT1 zone, and 3 in the VT2 zone. Martins et al. have previously reported that up to 5 ATPs are safe and effective even in the FVT (200—240 bpm) zone [7]. Other studies, as well as the 2015 Consensus recommend at least one ATP, preferably a burst ATP of at least 8 beats. The authors report that using these settings, inappropriate therapies were low. Inappropriate therapies occurred in 11 out of 250 patients (4.4%) over a relatively long follow up duration of 41.9 months. It is to be noted that almost none of these settings are the default settings of the devices used. Thus, this study re-emphasises the importance of changing the default settings of currently available ICDs.

The overall rate of therapies, and the rate of appropriate therapies in this study was much lower than in previously reported studies. In this study, at a follow up of 41.9 months, 9 out of 250 patients (3.6%) had VT/VF that was appropriately treated by the ICD. None of the 50 patients who received the ICD for a primary prevention indication experienced a therapy for VT/VF. In comparison, in the MADIT-RIT study, at a 1.4 year follow up of 1500 patients receiving a CRTD or dual chamber ICD for primary prevention, 139 out of 514 (27%), 64 out of 500 (12.8%), and 39 out of 486 (8%) patients received appropriate therapies for VT/VF in the conventional (therapy for VT > 190 bpm), high rate (therapy for VT > 220 bpm) and delayed therapy (therapy for VT > 190 bpm lasting > 60 seconds) arms respectively [8]. Comparable data for

therapy rates among secondary prevention patients is available from the secondary prevention subanalysis of the ADVANCE III study [9]. In the ADVANCE III secondary prevention subanalysis, at one year follow up, 419 therapies occurred among the 229 patients in the long NID group (NID comparable to this study). This translates to 87 therapies per 100 persons/year. In comparison, in this study, there were 104 therapies at a 41.9 month follow up of 200 patients; this translates to 14.9 therapies per 100 persons/year. The number of appropriate therapies was 8.9 per 100 persons/year in this study, compared to the 70 per 100 persons/year in the comparable subset of ADVANCE III. It is also of concern that in this study, the number of patients receiving inappropriate therapies (11 out of 250, or 4.4%) is more than the number of patients receiving appropriate therapies (9 out of 250, or 3.6%). In this report, 42 out of 104 therapies (40.3% of all therapies) were inappropriate. These numbers make it difficult to recommend these settings on a blanket basis; a larger event rate of appropriate therapies would be required to draw a firmer conclusion.

References

[1] Boles U, Gul EE, Fitzgerald L, et al. Standardized programming to reduce the burden of inappropriate therapies in implantable cardioverter defibrillators - single centre follow up results. Indian Pacing Electrophysiol J 2017;18(2): 56—60.

[2] Wilkoff BL, Fauchier L, Stiles MK, et al. 2015 HRS/EHRA/APHRS/SOLAECE expert consensus statement on optimal implantable cardioverter-defibrillator programming and testing. Europace 2016;18(2):159—83.

[3] Wilkoff BL, Williamson BD, Stern RS, et al. Strategic programming of detection and therapy parameters in implantable cardioverter-defibrillators reduces shocks in primary prevention patients: results from the PREPARE (Primary Prevention Parameters Evaluation) study. J Am Coll Cardiol Aug 12 2008;52(7): 541—50.

[4] Gasparini M, Menozzi C, Proclemer A, et al. A simplified biventricular defibrillator with fixed long detection intervals reduces implantable cardioverter defibrillator (ICD) interventions and heart failure hospitalizations in patients with non-ischaemic cardiomyopathy implanted for primary prevention: the RELEVANT [Role of long dEtection window programming in patients with LEft VentriculAr dysfunction, Non-ischemic eTiology in primary prevention treated with a biventricular ICD] study. Eur Heart J November 2, 2009;30(22):2758—67.

[5] Gasparini M, Proclemer A, Klersy C, et al. Effect of long-detection interval vs standard-detection interval for implantable cardioverter-defibrillators on antitachycardia pacing and shock delivery: the ADVANCE III randomized clinical trial. J Am Med Assoc May 8 2013;309(18):1903—11.

[6] Saeed M, Hanna I, Robotis D, et al. Programming implantable cardioverter-defibrillators in patients with primary prevention indication to prolong time to first shock: results from the PROVIDE study. J Cardiovasc Electrophysiol Jan 2014;25(1):52—9.

[7] Martins RP, Blangy H, Muresan L, et al. Safety and efficacy of programming a high number of antitachycardia pacing attempts for fast ventricular tachycardia: a prospective study. Europace 2012;14:1457—64.

[8] Moss AJ, Schuger C, Beck CA, et al. For the MADIT-RIT trial investigators. Reduction in inappropriate therapy and mortality through ICD programming. N Engl J Med 2012;367:2275—83.

[9] Kloppe A, Proclemer A, Arenal A, et al. Efficacy of long detection interval implantable cardioverter-defibrillator settings in secondary prevention

population data from the avoid delivering therapies for nonsustained arrhythmias in ICD patients III (ADVANCE III) trial. Circulation 2014;130:308—14.

A. Thachil
Cardiac Electrophysiologist, Lisie Hospital, Kochi, Kerala, India

E-mail address: docthachil@hotmail.com.