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Selection of the Best of 2016 in Implantable Defibrillators

Selección de lo mejor del año 2016 en desfibriladores implantables

To the Editor,

Although it is difficult to briefly review the most important implantable cardioverter defibrillator (ICD)-related developments from the last year (since September 2015), we consider it important to offer an outline of the articles we believe to be the most relevant for clinicians working in this field, while acknowledging that some important findings will be omitted.

The DANISH trial[1] addressed the use of ICDs in primary prevention in patients with nonischemic dilated cardiomyopathy. In this population, although ICDs are a class I indication in clinical guidelines, there is still no solid evidence for their use because no major study has examined the usefulness of these devices in this specific patient group. The DANISH study included 1116 patients with nonischemic dilated cardiomyopathy in New York Heart Association functional class II-IV receiving standard treatment for heart failure. These patients were randomized 1:1 to an ICD implant or usual clinical care. In both groups, 58% of patients underwent cardiac resynchronization therapy. After a median follow-up of 67.6 months, there were no differences in death from any cause or death from cardiovascular causes. However, there was a reduction in sudden cardiac death in ICD patients (hazard ratio [HR], 0.5; 95% confidence interval, 0.31-0.82; $P = .005$). ICDs had no benefit in patients undergoing cardiac resynchronization therapy. Although the data indicate that ICDs had a beneficial effect on total mortality in younger patients (less than 68 years), the difference was not statistically significant.

On the other hand, the work of Roth et al.[2] highlighted the benefits of drug optimization for heart failure by showing that patients with dilated cardiomyopathy who received guideline-directed medical therapy before ICD implantation have a lower mortality rate 1 year after ICD implantation (11.1% vs 16.2%).

Regarding ICD implantation, the results of the NORDIC ICD study,[3] with 1077 patients randomized to defibrillation testing at the time of ICD implantation, concur with those of previous studies reporting that systematic testing is not necessary.

A notable consensus statement on ICD programming was published by the 4 continental electrophysiology societies.[4] Numerous optimal programming-related recommendations were made, and the document particularly stressed ways to reduce inappropriate and unnecessary therapies, such as a prolonged detection duration for ventricular arrhythmia, an increased rate cutoff for ventricular tachycardia/ventricular fibrillation (VF), programming of more than 1 zone, and the use of discriminators for supraventricular tachycardia.

Regarding ICD follow-up, a Spanish multicenter observational study[5] that included 2507 consecutive patients used remote monitoring (CareLink, Medtronic) to analyze the baseline R wave amplitude and its relationship with R wave amplitude during VF detection. An R wave $\geq$ 5 mV seemed to be sufficient to ensure a rapid and accurate sensing of VF. In contrast, a median amplitude of $\leq$ 2.5 mV (interquartile range, 2.3-2.8 mV) could lead to at least a 25% rate of undersensed R waves during a VF episode. These data might be of interest in the follow-up of patients, when changes are being considered in the defibrillation lead at the time of generator replacement, and when defibrillation testing is planned in patients at high risk of complications.

Finally, it is important to highlight the work of Akar et al.[6] into remote monitoring because their results show that remote monitoring of ICDs is associated with a reduction in death from any cause and rehospitalizations. They analyzed the data of patients with an ICD, comparing patients with and without remote monitoring. A total of 37 742 patients were included in the mortality analysis and 15 254 in the readmission analysis. About 66% of the patients were at least 40 km from the implanting facility. The results found that remote monitoring was associated with a lower risk of death at 3 years (HR, 0.67; 95%CI, 0.64-0.71; $P < .0001$) and readmission for any cause (HR, 0.82; 95% CI, 0.80-0.84; $P < .0001$). These data once again show that the use of this technology should be expanded.

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Selection of the Best of 2016 in Catheter Ablation

Selección de lo mejor del año 2016 en ablación con catéter

To the Editor,

Recent data on catheter ablation approaches and outcomes have provided new clinical perspectives on our main goal of successful arrhythmia termination and lack of recurrences during follow-up.

The results are especially interesting in atrial fibrillation (AF) ablation; this substrate has progressively increased over the last 15 years and is currently the leading procedure in many electrophysiology laboratories in developed countries. The latter highlights the relevance of single-shot approaches vs conventional radiofrequency delivery as an attempt to decrease procedure duration while maintaining the efficacy achieved by conventional point-by-point ablation. Thus, the results of the randomized and multicenter FIRE and ICE trial have shown that cryoballoon ablation was not inferior to radiofrequency ablation with regard to documented recurrence of AF, documented occurrence of atrial flutter or atrial tachycardia, prescription of antiarrhythmic drugs (class I or III), or repeat ablation.[1] Procedure duration was significantly shorter in the cryoablation group than in the radiofrequency group (124.4 ± 39.0 vs 140.9 ± 54.9 minutes, respectively), although fluoroscopy time was significantly longer in the cryoablation group (21.7 ± 13.9 vs 16.6 ± 17.8 minutes). Complication rates did not differ between the 2 groups, although 1 case of esophageal ulcer was reported in the cryoablation group. The study only included paroxysmal AF patients, which precluded extrapolating such results to more complex substrates such as persistent AF. Success rates were ≈ 65% in both groups after a mean follow-up of 1.5 years, which is close to what has been reported in the presence of continuous rhythm monitoring, when experienced operators perform both techniques.[2]

Despite ≈ 70% freedom from AF after 1-year of follow-up, the established conventional approach of pulmonary vein isolation (PVI) during AF ablation still shows an important lack of specificity, which precludes increasing efficacy. The latter becomes more relevant with persistent AF, in which the success rate may decrease to 30% after 5 years of follow-up if subsequent procedures upon recurrences are not performed. Data from mechanistically based approaches have been shown to be promising in persistent AF with success rates of up to 77.8% after a median follow-up period of 2.4 years. The main aim of these approaches is to target specific atrial areas that may host rapid reentrant activity. However, it requires processing complex patterns of propagation occurring during AF by means of modern tools and computational analysis that have not been released to the scientific community for proper evaluation. This has generated many concerns among conventional electrophysiology laboratories, especially after the publication of completely different results from the multicenter OASIS trial, which showed poor success rates (14% free of AF/atrial tachycardia-free of antiarrhythmic drugs at 1-year follow-up) using the focal impulse and rotor modulation (FIRM)-guided ablation. However, this work, led by Natale et al. has been recently retracted by the editorial board of the Journal of the American College of Cardiology, due to nondisclosed deviation from a random allocation of participants to treatments across sites. This retraction further sharpens current confusion in the field until new trials are properly conducted.

Another very recent multicenter and randomized trial aimed to compare amiodarone vs AF ablation in challenging substrates, such as persistent AF in patients with left ventricular ejection fraction

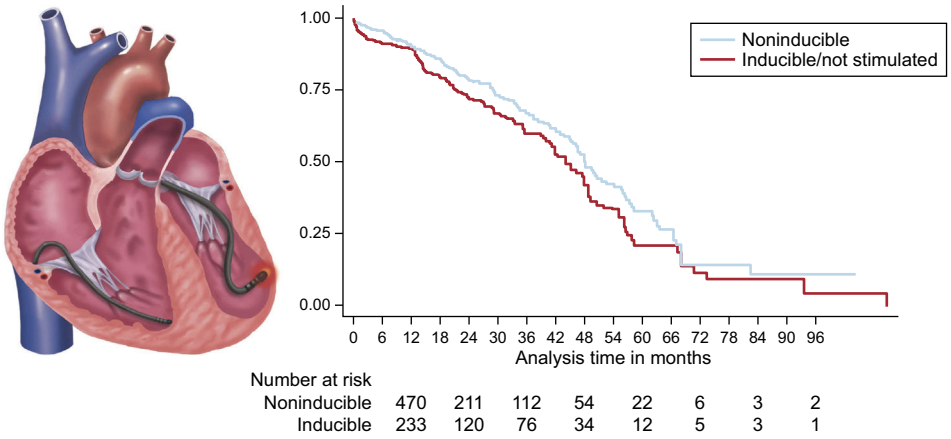

Figure. Survival in patients with ablated VT. In patients who have experienced a myocardial infarction, catheter ablation can render ventricular tachycardia (VT) noninducible and thereby reduce mortality and VT recurrence. The left panel illustrates catheters positioned in the right ventricle for programmed stimulation and in the left ventricle for ablation of VT within scar tissue. The right panel shows the Kaplan-Meier survival curve for those with noninducible VT compared with those with inducible VT or who did not undergo programmed stimulation. Noninducibility postablation was independently associated with lower mortality (log-rank, P = .02). Reproduced with permission from Yokokawa et al.[6]