Editorial Comment

Preventing Sudden Death with Implantable Defibrillators in Octogenarians: Too Much Too Late?

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Implantable cardioverter defibrillators (ICD) are highly effective in the prevention of sudden arrhythmic deaths. [1-3] The recurrence rate following an out of hospital cardiac arrest or ventricular tachycardia is as high as 24-44% over the ensuing 18-36 months that secondary prevention is an important consideration in patients without a clearly defined reversible cause such as acute ischemia or major metabolic derangement. In this context, the ICD has been shown to be superior to anti-arrhythmics drugs including amiodarone, in a number of clinical trials. [1,4,5] The value of an ICD is probably better expressed as the numbers needed to treat (NNT) to save a life. In the AVID trial, 9 patients had to be treated to save a life over a period of 3 years. The use of ICDs for primary prevention in patients at high risk for arrhythmic events is more controversial. The event rate is lower, and the benefit less pronounced as reflected in a larger NNT. In the MADIT II trial of patients with coronary artery disease and severe LV dysfunction, the NNT was 18 to save one life over a period of 20 months. In the SCD-HeFT study of heart failure patients with LVEF < 0.35, the NNT was 14 over 5 year. In all cases, a non-arrhythmic cause limiting life expectancy to less than 1 year rarely justifies the use of an ICD. The use of ICDs in patients with advanced age, the subject of this editorial, is not well defined in clinical trials either because of exclusion for age over 80 or low representation of this age group. The current "appropriate use" guidelines suggest that an ICD may be appropriate in patients over the 80 years, based on individual considerations. [6]

ICDs have a flip side. They are expensive and are associated with negative effects on quality of life. The adverse effects of an ICD include inappropriate shocks, infections, and hardware malfunction including the highly publicized recall advisories. Inappropriate shocks are a major cause of depression and post-traumatic stress disorder. Thus, the benefit of mortality reduction from an ICD comes at the cost of some morbidity. In addition, there appears to be a critical window in the course of heart disease when the ICD is most effective. In the AVID trial, the largest of the secondary prevention studies, benefit was mostly confined to patients with left ventricular ejection fraction between 0.20 and 0.35. Sudden deaths form an important component of heart failure mortality in individuals with better functional class and these patients stand to benefit most from an ICD. The value of the ICD recede as heart failure worsens; pump failure and electromechanical dissociation takes over as the predominant component of death in NYHA class IV heart failure. In the absence of an indication for cardiac resynchronization therapy, implanted defibrillators confer minimal benefit in Indian Pacing and Electrophysiology Journal (ISSN 0972-6292), 15 (1): 1-3 (2015)
advanced heart failure unless transplantation or long term assist devices are planned. [6]

In the current issue of the journal, Wilson et al. [7] present analysis of a single center experience with ICD implantation in octogenarians in the United Kingdom over a 6 year period to 2012. For unclear reasons, only data on 50 of 74 ICD recipients are presented. Annual mortality for the cohort was 14% representing a higher than usual mortality for an ICD population. Interestingly, most documented deaths were non-cardiac (5 patients died with pneumonia) reflecting co-morbidities and increased susceptibility to fatal infections in this age group. The data from the present study are largely in concert with prior publications of the use of ICDs in elderly patients. [6, 8]

Although mortality from cardiovascular disease has declined, the total disease burden has increased. People live longer but tend to be sicker. While the use of an ICD for secondary prevention is philosophically more acceptable for an otherwise healthy elderly patient, the use of the ICD for primary prevention generates more debate. Older patients are known to be at higher risk for sudden death. In addition, resuscitation from a cardiac arrest of the elderly is more likely to result in neurological damage and disability. Preventive measure would thus, be expected to be most effective for this population. However, these arguments have to be tempered against the fact that the elderly have a higher mortality from non-arrhythmic causes and the ICD may merely convert a sudden death to a non-sudden, potentially more distressing mode of demise. Against this backdrop must be included the wishes of a well-informed patient. An analysis based on SCD-HeFT and MADIT trials derived the following scenario for every 100 patients undergoing primary prevention ICD over a period of 5 years: 30 will die non-arrhythmic deaths, 7-8 patients will be saved by the ICD, 15-20 will receive a shock they do not need, 5-15 will experience other complications from the device, and the rest will not experience their device at all. [9] Explained in such terms, a patient is better placed to balance the risks and benefits of a device that often adds little to quality of life and has a modest effect on extending longevity.

Finally, we all recognize that the trajectory of senescence with advancing age is not always linear or uniform. Many 80 year-olds maintain an active and productive life style. For these patients, an ICD could be considered roughly equivalent to any therapy that reverses an acute illness. On the other end of the spectrum is the frail elderly patient with a poor quality of life and associated co-morbidities. For such a patient, implantation of an ICD could be a case of "too much, too late".

References


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