Implantable cardioverter-defibrillator therapy and the total burden of sudden cardiac death

Heikki V. Huikuri*

Institute of Clinical Medicine, Department of Internal Medicine, University of Oulu, Finland

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This editorial refers to ‘Ventricular arrhythmia in coronary artery disease: limits of a risk stratification strategy based on the ejection fraction alone and impact of infarct localization’ by P. Pascale et al., on page 1639.

Sudden cardiac death (SCD) affects ~400 000 individuals annually in Europe, causing more deaths than AIDS, lung and breast cancer, and stroke together. More than 50% of all cardiovascular deaths are sudden and unexpected, accounting for 1–2 deaths/1000 adults over the age of 35 years. Despite considerable advances in the field, cardiac arrhythmias and SCD remain major contributors to morbidity and mortality in the Western world, representing a tremendous burden to families, community, and health care. Within the populations suffering from SCD are high-risk subgroups, largely those with left ventricular ejection fraction (LVEF) <35% after myocardial infarction.1 A large majority of SCDs do not occur within these high-risk groups, but rather as the first clinical expression of previously silent heart disease or among the subjects with a known coronary artery disease (CAD) without an evidence of heart failure.1,2

The implantable cardioverter-defibrillator (ICD) is an effective therapy for preventing death due to cardiac arrhythmias. Current guidelines recommend prophylactic implantation of ICD for patients with depressed left ventricular ejection fraction (LVEF) <35%. However, majority of sudden cardiac deaths seem to occur in patients without left ventricular dysfunction. For example, a large post-infarction database showed that a larger portion of sudden deaths occur among the patients with LVEF >35% than in those with LVEF <35% in the modern treatment era.3 Therefore, it is evident that ICD therapy has not had a significant impact on the incidence and overall problem of premature sudden death at the community level.

The results of the study by Pascale et al. reinforce the findings of previous studies, which have focused on victims of sudden cardiac death and shown that ICD therapy may reach only a minority of patients at risk for premature sudden death.4 The investigators collected a consecutive series of patients surviving a life-threatening arrhythmia event in a single-centre, and their main finding was that only a minority of their patients belonged to those who would have been qualified for prophylactic ICD therapy according to the current guidelines. There are some limitations in the study design of Pascale et al., which deserve some comments. One limitation is that only patients who survived a life-threatening arrhythmia event were included. It is evident that the characteristics of survivors and victims of ventricular tachyarrhythmia event may differ significantly. Secondly, patients with clinical presentation of stable sustained ventricular tachycardia were included in this study. The characteristics of this patient group may also differ significantly from those who present with ventricular fibrillation and cardiac arrest. It should be noted that stable sustained ventricular tachycardia among the patients with preserved LVEF is not a class I indication for ICD therapy in current guidelines.

Because of these major limitations, the result of the study of Pascale et al. may not significantly increase our knowledge, whether the ICD therapy is currently used for those who would mostly benefit from it. However, the study further highlights the importance of attempts aimed at studying risk markers of SCD in patients with preserved LVEF and in performing well-designed, randomized trials in patients without markedly depressed LVEF.

To have a meaningful impact on this large public health problem, better methods of individual risk prediction and new strategies in risk stratification are needed to direct life-saving ICD therapy to those who really will benefit from it.

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References


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* Corresponding author. Tel: +358 8 315 4108, Fax: +358 8 315 5599, Email: heikki.huikuri@oulu.fi
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