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The role of implantable cardioverter-defibrillators in New York Heart Class I heart failure patients: do not abandon the asymptomatic just yet

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This commentary refers to 'The role of implantable cardioverter-defibrillators and sudden cardiac death prevention: indications, device selection and outcome', by I. Goldenberg *et al.*, 2020:41:2003–2011.

Goldenberg *et al.*[1] wrote an excellent review of patient selection for implantable cardioverter-defibrillator (ICD) therapy, device selection, and programming, providing a comprehensive overview for clinical practice, including current guidelines for ICD implantation. Although the authors describe the discrepancy that exists between the American and European guidelines concerning primary prevention ICD implantation in New York Heart Association (NYHA) Functional Class I patients, NYHA Class I patients as a potential group for prophylactic defibrillator therapy were not included in their take-home figure showing an algorithm for ICD patient selection.

We recently described that NYHA Class I patients receiving an ICD for primary prevention of sudden cardiac death (SCD) experienced more appropriate ICD therapy for ventricular arrhythmias compared to NYHA Classes II–III patients (hazard ratio 1.5, 95% confidence interval 1.04–2.31; $P = 0.03$).[2] This finding is consistent with a recently published prospective registry, showing asymptomatic ischaemic cardiomyopathy ICD patients with a reduced ejection fraction to have a two-fold higher risk for appropriate ICD therapy compared to symptomatic ICD patients.[3] Unfortunately, the more recent randomized prophylactic ICD trials, such as the SCD-HeFT and DANISH, exclusively enrolled symptomatic heart failure patients. The MADIT-II study (2002) did include almost one-third of asymptomatic ischaemic cardiomyopathy patients and reported a similar survival benefit across the three NYHA classes after 8 years of follow-up.[4] However, MADIT-II was performed almost two decades ago, and improved medical heart failure therapy and coronary revascularization techniques hamper extrapolation to the current heart failure population. Nevertheless, a sub-analysis of the DANISH trial (2016) revealed that younger patients and patients with a lower NT-proBNP have an increased benefit of ICD implantation,[5] suggesting an incremental value of ICD therapy in the less vulnerable heart failure patient.

Although the mechanism between the occurrence of ventricular arrhythmias and heart failure symptoms is unknown, we hypothesized that patients who are without limitation of physical activity (i.e. asymptomatic patients) are exposing themselves to a greater risk of exercise-induced arrhythmias.[2] Furthermore, Sabbag *et al.*[3] suggest that a competing risk between ventricular arrhythmias and cardiovascular death by NYHA class results in a higher burden of arrhythmias in patients with a less advanced stage of heart failure.

Since recommendations between the American and European SCD guidelines differ and randomized data concerning SCD in asymptomatic heart failure patients is scarce, eligibility of NYHA Class I patients for primary prevention ICD implantation remains ambiguous and based on the physicians' judgement and patients preference. Nonetheless, we believe that our data and that of others suggests that NYHA Class I patients with a reduced left ventricular ejection fraction are at increased risk of SCD, and should be considered for primary prevention ICD implantation. Future studies focusing on SCD in asymptomatic heart failure patients are needed to evaluate the value of ICD therapy in the modern era.

Conflict of interest: none declared.

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