Device Therapy - Implantable Cardioverter Defibrillator (ICD)

Prognostic impact of subcutaneous implantable cardioverter-defibrillator appropriate and inappropriate shocks

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Background: Previous studies have shown an adverse prognosis for patients with transvenous implantable cardioverter-defibrillators (ICD) who receive both appropriate and inappropriate shocks. There is a paucity of data regarding the prognosis of inappropriate shocks in patients with a subcutaneous ICD (S-ICD).

Purpose: To assess and characterize S-ICD appropriate (AS) and inappropriate shocks (IAS) and their impact on mortality.

Methods: Single center observational registry of 162 consecutive patients who underwent S-ICD implantation for primary and secondary prevention between November 2009 and September 2020. Only follow-up data of at least 6 months was analysed to identify predictors of both IAS and AS and their mortality impact.

Results: A total of 144 patients were included in the analysis. Mean age was 42.2 ± 16.6 years and 75% of the patients were male. One hundred and four patients (72.2%) implanted the S-ICD in primary prevention. The most common etiology was ischemic cardiomyopathy (22.9%) followed by hypertrophic cardiomyopathy (18.8%) and dilated idiopathic cardiomyopathy (14.6%). During a mean follow-up of 42.3 ± 29.9 months a total of 48 patients (33.3%) experienced at least one S-ICD shock. Twenty-nine (20.1%) patients received AS due to VT/VF and 31 patients (21.5%) received IAS. Eighteen (58.1%) of the IAS were due to oversensing/noise/discrimination errors and the remaining due to supraventricular tachycardia. Overall, patients with AS (HR 4.93, 95% CI 1.58-15.36, p = 0.006) and higher number of total AS (HR 1.10, 95% CI 1.00-1.20, p = 0.044) were associated with higher mortality during follow-up. S-ICD IAS therapy did not affect overall mortality (HR 1.71, 95% CI 0.21-14.0, p = 0.616). Conclusions: In patients with S-ICD, those who receive AS, in contrast to IAS, seem to have a worse prognosis. Large scale studies are needed to confirm this hypothesis and to explain this findings.

Abstract Figure. Survival curves for AS and IAS