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Conversion test during Subcutaneous Implantable Cardioverter-Defibrillator Implantation in clinical practice: in-hospital and mid-term outcome

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Background: With subcutaneous implantable cardioverter-defibrillators (S-ICD), conversion test (CT) is still recommended at implantation. However, prior works found that adherence to this recommendation is declining in clinical practice.

Purpose: To describe current practice regarding CT at S-ICD implantation, and also measure in-hospital outcome of patients who underwent CT and mid-term outcome of patients without CT.

Methods: We analyzed 1652 consecutive patients (49 ± 15 years old, 80% male, 51% with ischemic or non-ischemic dilated cardiomyopathy, 45% with ejection fraction ≤35%) who underwent S-ICD implantation in 60 Italian centers from 2013 to 2019.

Results: CT data were missing in 27 patients. CT was performed in 1300 patients. Successful conversion with ≤65J was obtained in 97.4% of patients. Shock at 80J was not effective in 12 (0.9%) patients. In 10 of these patients the CT was successful after device repositioning, while in 2 patients it was decided to implant a transvenous ICD. Two (0.15%) episodes of electromechanical dissociation (1 fatal) were reported as consequence of CT. CT was not performed in 325 patients (for clinical reasons in 182 patients, for facility preference in 71, ventricular fibrillation not inducible in 72 patients). As compared to the CT group, these patients were older (51 ± 16 vs. 48 ± 15 years; $p < 0.01$) and had lower ejection fraction (37 ± 16% vs. 46 ± 16%; $p < 0.01$). 243 non-CT patients had at least 6 months follow-up (median 15 months). In this group, 12 (4.9%) patients had appropriate shocks to treat VT/VF (all successfully terminated with the first shock), and 9 (3.7%) patients had inappropriate shocks.

Conclusions: This analysis showed that CT is frequently omitted in current clinical practice, especially in older patients with worse systolic function. Shocks at CT are very frequently effective and system revision after CT is rarely required. CT is also safe, although serious adverse events cannot be excluded. A strategy that omits CT did not appear to compromise the effectiveness of the S-ICD, but larger populations and longer follow-up are needed to confirm this finding.