Evaluation of Defibrillation Safety and Shock Reduction in ICD Patients with Increased Time to Detection: The Randomized SANKS Study

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Background: The need for ways to minimize the number of implantable cardioverter defibrillator (ICD) shocks is increasing due to the possibility of adverse effect on life expectancy. Studies have shown that a longer detection time for ventricular tachyarrhythmia reduces therapies safely as measured by syncope and mortality; however, the safety has not been substantially evaluated by the success rate. We aimed to evaluate the effects of increased number of intervals to detect (NID) VF on the safety of ICD shock therapy and on the number of inappropriate shocks.
Methods: The present study was a prospective, multicenter, randomized, crossover study. Randomized VF induction testing with NID 18/24 or 30/40 was performed to compare the success rate of defibrillation with a 25-J shock, and the time to detection. Inappropriate shock episodes were simulated retrospectively to evaluate a possibility of episodes avoidable at NID 30/40.
Results: Thirty-one consecutive patients implanted with an ICD or cardiac resynchronization therapydefibrillator (CRT-D) were enrolled. The success rate of defibrillation was 100% in both NID groups at the first shock. The time from VF induction to detection showed a significant increase in NID 30/40 (6.16 ± 1.29 versus 9.00 ± 1.31 seconds, $p < 0.001$). Among 120 patients previously implanted with an ICD or CRT-D, 10 experienced 32 inappropriate shock episodes. The inappropriate shock reduction rate was 62.5% with NID 30/40.
Conclusions: The SANKS study suggests that VF NID 30/40 does not compromise the safety of ICD shock therapy, while decreasing the number of inappropriate shocks.