Upper Limit of Vulnerability at Defibrillator Implantation Predicts the Occurrence of Shocks


Division of cardiovascular medicine, Department of internal medicine, Kobe University Graduate School of Medicine, Kobe, Japan

Background and Purpose: The utility of upper limit of vulnerability (ULV) testing in patients undergoing defibrillator implantation has been reported. The purpose of this study was to evaluate the difference of outcome between patients with ULV<15J and >15J. Methods: A total of 94 consecutive patients were underwent ICD or CRT-D implantation from February 2009 to December 2010. ULV test has performed in 74 patients, which were retrospectively reviewed. At implantation, we delivered 15J shock on the peak of T-wave three times to ensure that the most vulnerable part of the cardiac cycle is scanned. If VF was not induced, it meant ULV<15J (n=60). On the other hand, if VF was induced, it meant ULV>15J (n=14) and we delivered 20J shock subsequently. When defibrillation was failed, defibrillation threshold was examined closely as much as possible.

Results: Patient characteristics between two groups were comparable. After mean follow-up of 393±196 days, the proportion of appropriate shocks in the two groups was 0% vs 21% (p=0.003). There was no case of failed appropriate shocks and death in both groups. Conclusion: ULV can be applied to a safety-margin strategy without inducing VF, and also, is the predictor of the occurrence of appropriate shock in patients with ICD.

Keywords: ULV, DFT, ICD