Incidence and predictors of appropriate implantable cardioverter defibrillator therapies in patients with ischemic heart disease in the Nippon Storm Study

Authors:
Y Kondo¹, T Noda², T Nitta³, Y Aizawa⁴, T Ohe⁵, T Kurita⁶, ¹Chiba University Graduate School of Medicine, Department of Advanced Cardiorhythm Therapeutics - Chiba - Japan, ²National Cerebral and Cardiovascular Center - Osaka - Japan, ³Nippon Medical School - Tokyo - Japan, ⁴Tachikawa Medical Center - Niigata - Japan, ⁵Okayama City Hospital - Okayama - Japan, ⁶Kindai University - Osaka-Sayama - Japan,

Topic(s):
Implantable Cardioverter / Defibrillator

Citation:
Background: Implantable cardioverter defibrillators (ICDs) have become an established therapeutic option for reducing the risk of sudden cardiac death (SCD). The Nippon Storm Study was a prospective observational study designed to recruit clinical data from patients on ICD therapy. Identifying predictors of ICD therapies could help identify those at risk and reduce the incidence of this emergency situation, which has a detrimental effect on mortality. Therefore, the purpose of this sub-analysis was to identify the incidence and the predictors of ICD therapies in patients with ischemic heart disease (IHD) in the real world clinical practice.

Methods: We analyzed 493 ICD patients with IHD in this study (male, 429(87%) patients; age, 68±10 years). The mean left ventricular ejection fraction (LVEF) was 36±13%. One hundred forty-three patients (29%) had heart failure classified as New York Association class III or IV. One hundred fifty patients (30%) were implanted a triple-chamber ICD. Three hundred fifteen patients (64%) were implanted ICD for secondary prevention for SCD. All patients were followed-up for at least 2 years. For time-to-event outcomes, event curves for ICD therapies were created using the Kaplan-Meyer methods for estimation of cumulative incidence. Multivariate Cox regression analysis with the forward selection method was used to find the predictors for ICD therapies.

Results: The incidences of appropriate ICD therapies in patients with primary and secondary prevention for SCD were 14.1% and 23.5% at 2-year, respectively. The result of multivariate analysis showed that age (Hazard Ratio (HR), 1.031; 95% Confidence Interval (CI), 1.012-1.051; p-value, 0.0011), LVEF (HR, 0.978; 95% CI, 0.962-0.995; p-value, 0.012); and secondary prevention for SCD (HR, 1.929; 95% CI, 1.155-3.220; p-value, 0.012) were the potential risk factors for appropriate ICD therapies in these patients.

Conclusions: Among patients with IHD, the incidence of ICD therapies was fairly high. Age, cardiac function and secondary prevention for SCD were the predictors of appropriate ICD therapies in patients with IHD.