Incidence of sustained ventricular tachyarrhythmias in patients with non-ischemic cardiomyopathy in a multicenter multinational WCD cohort


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Background: Defibrillator use in patients with non-ischemic cardiomyopathy (NICM) and heart failure with reduced ejection fraction (HFrEF) remains controversial after the DANISH study. The new ESC guidelines recommend individualized risk stratification in these patients. The wearable cardioverter-defibrillator (WCD) seems to be appropriate to both protect and screen patients with HFrEF at risk for sudden cardiac death (SCD).

Purpose: To evaluate the rate of ventricular tachyarrhythmias (VT/VF) in NICM vs. ICM patients receiving a WCD for temporary SCD protection.

Methods: 1157 patients were included in a multicenter registry from eight European centers. Among these patients, 602 patients received a WCD due to ischemic cardiomyopathy (ICM) and 555 patients for non-ischemic cardiomyopathy (NICM). Incidence of VT/VF and/or appropriate WCD shock discharge during WCD use were evaluated. The mean follow-up (FU) time of the whole cohort was 620.2±607.8 days.

Results: NICM patients were younger (mean 56.5±14.8a vs 63.9±11.6a; p<0.001) and less often male (75% vs. 87.2%; p<0.001) compared to ICM patients. Heart failure medication at hospital discharge did not differ between the two groups except for a higher prescription rate of aldosterone-antagonists in NICM compared to ICM patients (73.8% vs. 66.7%; p=0.02). The index left ventricular ejection fraction (LVEF) was significantly lower in NICM compared to ICM patients (mean 26.1±9.1% versus 29.5±9.2%; p<0.001). A larger extent of LVEF recovery was detected in NICM patients compared to ICM patients up to the end of WCD use (mean LVEF post WCD: 45.7±35.4% vs. 40.2±11.8%; p=0.02). Average daily WCD wear-time was significantly lower in NICM patients compared to ICM patients (mean 20.7±4.9h vs. 21.6±3.7h; p=0.01). NICM patients had a significantly lower incidence of sustained ventricular tachyarrhythmia (VT/VF) compared to ICM patients (3.4% vs. 6.6%; p=0.02). Consistently, rate of appropriate WCD shock was significantly lower in NICM vs. ICM patients (0.7% vs. 3.7%; p<0.001), as was rate of re-hospitalization (30.2% vs. 46.1%; p<0.001). Both groups showed a similar mortality rate during FU.

Conclusions: Patients at risk for SCD with NICM showed a more pronounced LVEF recovery, significantly lower incidence of VT/VF with concomitant shocks and hospitalization, while overall mortality was unchanged compared to ICM patients. These results indicate that WCD use might facilitate individual SCD risk stratification in NICM patients.