Risk of life-threatening ventricular tachyarrhythmia events in diabetes patients with higher ejection fraction in MADIT-CRT

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Background: Data on the risk of life-threatening ventricular tachyarrhythmia events in diabetes patients with mild heart failure (HF) and higher ejection fraction (LVEF) are not currently known.

Objective: We aimed to assess the risk of life-threatening ventricular tachyarrhythmia events in mild HF patients with diabetes in patients with baseline LVEF = 30% or >30%.

Methods: We evaluated the risk of life-threatening VT/VF treated with shock in mild HF patients with diabetes, by those with LVEF = 30% or >30%, enrolled in MADIT-CRT. Kaplan-Meier analysis and multivariate adjusted Cox regression models were utilized.

Results: Out of 542 mild HF patients with diabetes and VT/VF data, 206 (38%) had LVEF > 30% and 336 (62%) had LVEF = 30%. The 5-year cumulative probability of VT/VF treated with shock was 15% in patients with diabetes LVEF > 30% as compared to the 15% probability in patients with diabetes and LVEF =30% (p=0.342 for the overall difference in event rates during follow-up) (Figure). In Cox models, the risk of VT/VF treated with shock was similar in diabetes patients with LVEF>30% and LVEF =30% (HR=0.88, 95% CI=0.51-1.53, p=0.647) after adjustment for age, ischemic etiology, prior ventricular or atrial arrhythmia, and CRT-D-LBBB interaction. The risk of VT/VF treated with shock was similar regardless of LVEF in both CRT-D patients (HR=1.09, p=0.830) and ICD only patients (HR=0.67, p=0.345).

Conclusion: Diabetes patients with an LVEF > 30% are at similarly high risk of life-threatening ventricular tachyarrhythmias to patients with LVEF=30%. Our findings highlight the need for further investigation and treatment of this uniquely high-risk patient cohort with a higher ejection fraction.