

RISK OF VENTRICULAR TACHYARRHYTHMIAS IN CARDIAC RESYNCHRONIZATION THERAPY DEVICE RECIPIENTS

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Abstract:

Background: The effect of cardiac resynchronization therapy (CRT) on life threatening ventricular tachyarrhythmias (LT-VTA) is controversial. We hypothesized that this effect may be related to the underlying QRS morphology.

Methods: The study population comprised 2,862 patients with a QRS duration ≥ 130 ms who were implanted with an ICD or CRT and a defibrillator (CRT-D) for primary prevention in 5 landmark ICD trials (MADIT-II, MADIT-CRT, MADIT-RIT, MADIT-RISK, and RAID). We compared patients with an ICD vs CRT-D. Endpoints included: LT-VTA (defined as VT ≥ 200 bpm or ventricular fibrillation), and appropriate ICD shock. We estimated the burden of these endpoints by fitting multivariate models for recurrent events and generating mean cumulative function curves. All analysis were carried out in patients with LBBB vs NLBBB separately.

Results: Among patients with LBBB (N=1792), CRT-D was associated with a 45% (HR=0.55 p<0.001) reduction in the burden of LT-VTA , including reduced burden of appropriate ICD shocks (HR=0.44; p<0.001). In contrast, NLBBB patients with CRT-D experienced a 90% (HR=1.90; p=0.01) increase in the burden of LT-VTA , and a higher burden of appropriate shocks (HR=1.63; p=0.072).

Conclusion: Our data suggest that the arrhythmogenic effect of CRT is related to QRS morphology and should be considered when selecting patients for CRT implantation.