P1462

Incidence of ventricular arrhythmias in cardiac resynchronization therapy and implantable cardioverter-defibrillator patients

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Introduction: Implantation of a cardiac resynchronization therapy combined with cardioverter-defibrillator (CRT-D) is now common practice. Our study looked at the occurrence of the first adequate CRT-D therapy with respect to gender, treatment indication (primary or secondary prevention of sudden cardiac death) and the etiology of heart failure in long-term follow-up.

Methods: In the database of CRT-D patients implanted between 2005 and 2013 we analyzed the occurrence of treated episodes of ventricular arrhythmia (first shock or anti-tachycardic pacing).

Results: 250 patients (22.8% females) with left bundle branch block or non-specific interventricular conduction delay were enrolled. 80% of patients were implanted in the primary and 20% in the secondary prevention of sudden cardiac death. During the follow-up of 5.5 ± 2.5 years, 46.4% of patients died for cardiac (25.6%) or non-cardiac (20.8%) reasons. CRT-D therapy occurred in 33.2% of patients (20.8% shock). In patients implanted in the primary prevention of sudden cardiac death the incidence of therapies was 25.5% vs. 64.0% in patients implanted in the secondary prevention of sudden cardiac death (P<0.00001). The incidence of therapies between the group of patients with coronary artery disease and other causes of heart failure did not differ (33.3% vs. 32.9%, P = NS). Women were at a significantly lower risk of adequate shock (women 10.5% vs. men 23.8%, P = 0.01).

Conclusion: Adequate CRT-D therapy occurred in a quarter of patients implanted in the primary prevention of sudden cardiac death. In patients implanted in the secondary prevention of sudden cardiac death the incidence of therapies is significantly more frequent. The female gender predicts significantly lower incidence of adequate shock.

Abstract Figure. Adequate shock therapy