

Extended abstract

Single versus dual chamber implantable cardioverter defibrillator for the avoidance of inappropriate shocks - results from the OPTION trial

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Introduction Implantable Cardioverter Defibrillators (ICD) are considered to be the treatment of choice for primary and secondary prevention of sudden cardiac death. However, the therapy is burdened by inappropriate ICD shocks (for example for supraventricular tachyarrhythmias) which reduce patient's quality of life and acceptance of the device, although dual chamber (DC) ICD have access to atrial and ventricular information for tachyarrhythmia discrimination. Recent studies have failed to show a clear benefit in reducing inappropriate shocks by these devices [1-3]. But adequately powered trials with a long-term follow-up are scarce.

Methods Patients (pts) were recruited in 54 international centres and supplied with a DC ICD. A total of 453 pts were randomised to receive either standard SC programming or optimised DC programming [4]. Optimised DC programming was defined by the activation of the discrimination algorithm (PARAD+) and a mode (SafeR) to minimise ventricular pacing (Vp). ICD indications were primary (75%) or secondary (25%) prevention of sudden cardiac death; pts were aged 63±11 years (86% males). For the both groups, zones of arrhythmia detection were set with the following inferior cutoffs: VF 240; Fast VT 200; VT 170; slow VT 120 bpm. ATP and/or shock therapies were recommended to be activated in all these zones. Pts' outcome measures were the occurrence of inappropriate shocks, all-cause mortality and cardiovascular morbidity.

Results During an average follow-up (FU) of 23.8 months, DC ICD-therapy, as compared to SC ICD-therapy, was associated with significantly fewer pts experiencing inappropriate shocks (10/230 pts=4.3% vs. 23/223 pts=10.3%; p= 0.0146) and longer time to first occurrence of inappropriate shock (p=0.0122 in Kaplan Meier analysis). Comparing DC and SC ICD-therapy referring to mortality or cardiovascular events statistical equivalence was reached (p<0.0001), with similar rates in the sub-items of all cause deaths (21/230 pts=9 % vs. 18/223 pts=8%) and cardiovascular events (33/230 pts=14% vs. 40/223 pts=18%).

Conclusions DC-therapy with optimized arrhythmia discrimination and minimised Vp, as compared to standard SC therapy, was associated with a significantly lower occurrence of inappropriate shocks over the 2 years follow up. This benefit was reached with an equivalent rate of all-cause mortality and cardiovascular events.

Keywords Arrhythmia discrimination • Inappropriate shocks • Implantable cardioverter defibrillator • Pacing • Shock • Survival • Tachyarrhythmias.

Literature

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