Implantable cardioverter defibrillator therapy in a young population: differences between conventional and subcutaneous devices

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BACKGROUND

Implantable cardioverter-defibrillators (ICDs) are the most effective therapy for primary and secondary prevention of sudden cardiac death (SCD). Currently, two device options are available: transvenous and subcutaneous (S-ICD). The later has the advantage of avoiding transvenous leads and is becoming widely used in children, young adults and patients for whom venous access may be difficult to achieve. Nevertheless, it is unclear whether the positive aspects of the S-ICD outweigh its disadvantages.

AIM

Our aim is to study a population of patients (pts) under 35 years of age, who had a conventional or S-ICD implanted and evaluate the safety and efficacy of the devices.

METHODS AND RESULTS

At our instituion, about 250 ICDs are implanted each year. All pts under 35 years old who implanted ICDs (either conventional or subcutaneous) from November/2009 to December/2013 were included in this analysis (n=44, 70% men, mean age 25±8 years, youngest patient with 10).

Main indications were hyperthrophic cardiomyopathy (36%), idiopathic or post-myocarditis cardiomyopathy (16%), left ventricular noncompaction (14%) and Brugada syndrome (11%). 80% of the devices were implanted for primary prevention. 13 pts (29,5%) had appropriate shocks (VF n=7, VT n=5).

S-ICDs were implanted in 12 pts [39% of all S-ICDs (31) implanted in this period of time], the remaining had conventional ICDs implanted.

Median time of follow-up was 29 [20-42] months. There was no significant difference in the incidence of complications such as infection (n=1, 8.3% in the S-ICD group vs. n=2, 6.3%, p=n.s.) or inappropriate shock therapy (n=3, 25.0% in the S-ICD group vs. n=7, 21.9%, p=n.s.). There were no undetected fatal arrythmias. There were no complications related to transvenous lead insertion (pneumothorax or hematothorax and cardiac perforation) and there were no lead dislodgement or fracture in either group. No patient referred discomfort related to the device and no patient was pacemaker-dependent.

CONCLUSION

In our S-ICD candidate population (no pacemaker-dependent patients), no differences were observed on efficacy or safety of subcuteneous versus transvenous devices.