Hypertrophic Cardiomyopathy Subcutaneous ICD is better than transvenous ICD: A case Report

A. Rago, E.Ammendola, D.Masarone, G.Limongelli, G. Pacileo, L. Santangelo
Cardiologia Seconda Università degli Studi di Napoli A.O. Monaldi

Background: Many studies have established the efficacy of implantable cardioverter defibrillators (ICDs) as life-saving therapy for patients at risk of sudden arrhythmic death. However, with the prolonging survival period and an increasing number of multi-lead system (e.g. pace maker single- dual chamber or *cardiac resynchronization therapy – CRT*),the absolute percentage of complications rises. Complications of ICDs are often linked to transvenous lead insertion, lead failure, or infection (1). We describe the case of a young man with complications after implantation of dual chamber ICD.

Fig 1

Fig 2

Case report: A 32 years old patients with history of hypertrophic cardiomyopathy and implanted with conventional dual chamber ICD (2010, ST Jude with Riata lead) was sent to our center, in April 2014, for dehiscence of the generator pocket and ICD malfunction (fig.1-2). ECG showed marked of left ventricular hypertrophy. Echocardiographic evaluation showed severe concentric left ventricular hypertrophy (LVH) with maximal wall thickness at anterior interventricular septum (21 mm). He had also left ventricular outflow tract obstruction. Device interrogation revealed abnormal increase electrical parameters to the impedance testing. The patient underwent a Cine fluoroscopy at 15 frames per second in our electrophysiology laboratory in three views {anteroposterior (AP), left anterior oblique (LAO) and right anterior oblique (RAO)} around 30o each. The screening fluoroscopy demonstrated a ventricular lead externalization. In view of the failure of transvenous system, the patient underwent to implant of subcutaneous ICD (S-ICD). Under local anesthesia and sedation, S-ICD was implanted through a left lateral incision. The electrode was placed subcutaneously parallel to the sternal midline and was connected to the generator. At the end of procedure, a shock zone was programmed to > 220 bpm and defibrillation threshold (DFT) testing performed: clinical ventricular fibrillation was induced, correctly sensed and treated after 12.5 second with a 65 joule shock (conventional polarity configuration). After one month, the system was completely removed and transvenous lead extraction (fig 3).

Discussion: S-ICD was developed in recent years and the goal of developing such system was to overcome some the problems associated with traditional ICD system, in particular lead failure or infections.
Sudden cardiac death (SCD) is often the first presenting symptom of HCM in the young and is the leading cause of sudden death in adolescents and young athletes. ICD therapy may effectively terminate potentially life-threatening ventricular arrhythmias, thereby preventing SCD and prolonging life (2). Several studies demonstrated frequently lead dysfunction or damage often resulted in inappropriate device shocks and required extrasurgical interventions. Another, important complication is device related infections were predominantly observed in a long-time interval after implantation procedure and required complete removal of the ICD system in the vast majority of cases. What should be emphasized, especially in the context of recent recommendations concerning lead extractions, is that one should react early before local infection widens. Implanting an S-ICD in patients at risk of sudden cardiac death may help to overcome most of the acute and chronic complications of traditional system. In particular, young patients with inherited arrhytmogenic syndrome could benefit the most from this system (3).

Fig 3

Conclusion: the patient showed excellent acceptance of the S-ICD and reported improved quality of life from the previous experience with transvenous ICD.

Reference

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