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IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR THERAPY IN BRUGADA SYNDROME: A 30-YEAR SINGLE-CENTER EXPERIENCE

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Background: Brugada syndrome (BrS) continues to pose clinical complexities, even with three decades of dedicated research and therapeutic progress. The pivotal role of implantable cardioverter-defibrillator (ICD) therapy in safeguarding high-risk BrS patients from sudden cardiac death due to ventricular arrhythmias is undeniable. Yet, the discourse on risk stratification and the primary preventive role of ICDs remains open.

Objectives: The objective of this study was to investigate clinical features, management, and long-term follow-up of ICD therapy in patients with Brugada syndrome. Our thirty-years journey, collecting more than 300 patients treated with an ICD since the very first description of the syndrome to present, being the longest reported follow-up of BrS patients, reveals the inherent complexities of BrS management and underscores the crucial role of longitudinal data in shaping clinical practice.

Methods: BrS-diagnosed patients were prospectively registered into the UZ Brussel BrS cohort. Inclusion parameters included a Brugada type 1 ECG pattern, either spontaneous or drug induced, ICD implantation, and consistent follow-up at our center. We stratified risk based on previous arrhythmic events and utilized the multiparametric Brussel risk score since 2017. From 2016, high-risk patients underwent a video-thoracoscopic epicardial ablation. The ICD implantation methodology evolved over time, with decisions driven by patients' clinical and demographic characteristics.

Results: Between 1992 and 2022, 306 BrS patients received an ICD at our institution. Of these, 60.8% were male with an average age of 41.0 years-old. Genetic testing, conducted on 68.3% of the patients, identified SCN5A mutations in 28.7%. From the total cohort, 16% of the ICDs were implanted in secondary prevention and 83.9% in primary prevention. A higher proportion of patients were classified as high-risk in the first decades, although secondary prevention implantations and asymptomatic patient proportions remained stable. Over an average follow-up of 113.7 months, 23.9% of the patients experienced ventricular arrhythmias (VAs) after ICD implantation, and 15.4% of the patients experienced at least one inappropriate ICD shock. Patients with secondary prevention ICDs showed a higher VA incidence than those with primary. Older age and male gender were associated with an increased all VAs incidence. Among high-risk patients, those who underwent thoracoscopic epicardial ablation showed significantly fewer VAs than those who didn't. Mortality rate was 5.88%, with cardiac reasons accounting for 22.2% of these deaths. Over the 30 years, 2 patients underwent heart transplantation.

Conclusion: This research delineates the evolution of ICD implantation approaches in Brugada patients across thirty years, underlining shifting strategies and resultant outcomes. The findings accentuate the enduring challenges and emerging solutions in BrS management, providing a comprehensive overview that can inform and optimize future patient care.

