Improved real-time recordings using the fourth generation cryoballoon technology – detection of dual fascicle electrograms

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Abstract

Introduction: We aimed to analyze the rate of visualization of real-time (RT) recordings and dual fascicle electrograms in our first series of patients treated with the fourth generation cryoballoon (CB) device. Methods: All consecutive patients who underwent CB ablation using the fourth generation technology were included in the analysis. In all procedures we used a 28 mm CB placed via a single transseptal puncture guided by intracardiac ultrasound. A 20 mm octapolar intraluminal circular catheter was used for intracranial recordings. A single 180 seconds freeze strategy was employed. Results: A total of 123 patients (72.9% male, mean age 60.1±10.9 years) were enrolled in the study. RT recordings were detected in 445 (86.2%) pulmonary veins (PVs). Specifically, RT recordings were visualized in 115 left superior PVs (89.2%), 107 left inferior PVs (82.9%), 118 right superior PVs (91.4%) and 105 right inferior PVs (81.3%). Furthermore, in 23 of 516 PVs (4.4%), two fascicle electrograms were detected. Dual fascicles were most commonly observed in left superior PV (6.2%). In both inferior PVs dual fascicles were observed in 4.6% while this phenomenon was least frequent in right superior PV (2.3%). Conclusion: By using the fourth-generation CB we report a specific pattern of isolation represented by a sequential isolation of two apparently distinct PV fascicles during a single CB freeze delivery. This phenomenon occurred in 4.4% of PV ablations. Of note, the rate of visualization of RT isolation with this novel CB was very high and could be documented in 86.2% of PVs.

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