Efficacy and safety of cryoballoon ablation in heart failure: a multicenter study

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Background: CB2-based PVI has demonstrated encouraging clinical results in the treatment of paroxysmal atrial fibrillation (AF) and persistent atrial fibrillation (PersAF).

Purpose: This study sought to assess data on safety, efficacy and one-year clinical success of second-generation cryoballoon (CB2)-based pulmonary vein isolation (PVI) in patients with heart failure (HF).

Methods: CB2-based PVI was performed in 551 consecutive patients in three highly experienced german EP centers. Patients with HF and left ventricular ejection fraction (LVEF) of =40% were included into the analysis (HF group, n=50/551, 9.1%). The data was compared to propensity score matched patients without structural heart disease and preserved LVEF (n=50, control group).

Results: The median LVEF was 37% (35, 40) and 55% (55, 55) for HF group patients and control group patients, respectively (p<0.0001). The proportion of PersAF was 14/50 (28%, HF group) and 13/50 (26%, control group), p=0.999. The mean procedure time was 131±39 minutes (HF group) and 126±33 (control group), p=0.420. Major complications were registered in 4/50 (8%) HF patients and 3/50 (6%) control group patients (p=0.695). 12-months clinical success in terms of freedom from AF recurrence was 73.1% (95%CI: 61 - 88, HF group) and 72.6% (95%CI: 61 - 87, control group), p=0.25. NYHA class was changed from 2.42±0.83 at baseline to 1.66±0.77 at 12 months follow-up (p<0.0001). LVEF improved from a median of 37% (35, 40) prior ablation to a median of 55% (40, 55), p<0.0001).

Conclusions: CB2-based PVI in HF patients appears to be safe, is associated with comparable complication rates and shows promising clinical success rates comparable to patients without HF. NYHA class and LVEF significantly improved at 12 months follow-up.