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More procedural complications in female patients undergoing pulmonary vein ablation in atrium fibrillation: results from 12,430 patients in the Netherlands heart registry

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On behalf: NHRAF investigators

Topic(s):
Rhythm Control, Catheter Ablation

Citation:

Introduction: Pulmonary vein isolation (PVI) has become a cornerstone of the treatment of atrial fibrillation (AF). Several technologies have been developed to improve procedural and long-term outcomes. Depending on type of AF and rhythm recording used, 1-year freedom of AF varies between 55-82%. However, severe complications are reported in 1-3%.

Purpose: To describe procedural complications of PVI with either single tip radiofrequency ablation (STRF), multi electrode phased RF ablation (PVAC) or cryoballoon (CB).

Methods: Data was extracted from the Netherlands Heart Registry in which 14 Dutch heart centres participate. Procedural complications in patients treated with the 3 different ablation modalities (STRF, PVAC and CB ablation) were compared. Complications included: pericardial tamponade, persistent phrenic nerve palsy (PNP) beyond 24hrs, thromboembolic events, vascular- and bleeding complications. Patient characteristics: gender, age, BMI, CHA2DS2-VASc, type of AF and previous left atrium ablation were assessed in a univariate and multivariate regression model.

Results: In total, 12,430 patients were included (STRF n= 5,106, PVAC n= 2,341, CB n=4,983) between January 2013 and December 2017, of whom, 69% were male, 74% had a history of paroxysmal AF, 24% persistent AF and 2% longstanding persistent AF. The incidence of complications within 30days was 3.6%. Pericardial tamponade requiring intervention, occurred more frequently in the STRF group (STRF: 0.8% vs PVAC 0.3% vs CB 0.3% p= <0.01). PNP was present in 0.1% of patients after STRF ablation, in 0.2% of patients after PVAC ablation and in 1.5% of patients treated with CB ablation (p= <0.001). Thromboembolic events were observed in 0.4% with no statistical difference between the 3 modalities. Patients treated with STRF had more vascular complications (STRF 1.7% vs PVAC 1.2% vs CB 1.3% p= <0.001). In the PVAC and CB group there were significant less bleeding complications (STRF: 1.1% vs PVAC: 0.5% vs CB: 0.7% p= 0.01). Female patients and patients with a higher CHA2DS2-VASc had an increased risk for pericardial tamponade, vascular- and bleeding complications (figure) with adjusted odds ratios for female patients of 2.97 (95% C.I. 1.77 – 5.00), 2.24 (95% C.I. 1.41 – 3.56) and 2.84 (95% C.I 1.88 – 4.28) respectively.

Conclusion: PVI was associated with a complication rate of 3.6%. Compared to PVAC and CB ablation, patients treated with STRF ablation more often developed a pericardial tamponade and vascular- and bleeding complications. PNP occurred most frequent in patients undergoing CB ablation. Female gender and CHA2DS2-VASc were independent predictors for pericardial tamponade, vascular- and bleeding complications.
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