Abstract

Introduction: Persistent left superior vena cava (PLSVC) is the embryological precursor of the ligament of Marshall, which has been implicated in the initiation and maintenance of atrial fibrillation (AF). However little clinical data about the relevance of PLSVC in paroxysmal AF are available.

Methods and results: Between January 2005 and December 2012, seven patients (4 men; age 55 ± 9.9 years) with symptomatic drug-refractory AF and PLSVC received a catheter ablation in our institution. All patients had paroxysmal AF and received circumferential pulmonary vein isolation (PVI). PLSVC was mapped with a circumferential mapping catheter following PVI, and ectopics originating from PLSVC was documented in two patients. They received isolation of PLSVC because PLSVC had electrical connections to coronary sinus and left atrium. In four patients, there was no electrical potential in PLSVC. During follow-up of 16 ± 9.8 months, six of the seven patients were in sinus rhythm and free from AF.

Conclusion: PLSVC can be the arrhythmogenic source of AF. PVI may not be sufficient to suppress AF in patients with PLSVC, thus PLSVC isolation should be considered.
Incidence and Severity of Pulmonary Vein Stenosis After Isolated Cryoablation and After Mixed Isolation with Cryoballoon and Radiofrequency


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Abstract

Introduction / Purpose: It has been suggested that pulmonary vein (PV) stenosis is a rare complication of cryoballon ablation (CB). However, PVs stenosis frequency could be higher in mixed procedures in which radiofrequency (RF) is used to complete the isolation following pulmonary vein cryoablation.

Methods: We analyzed the incidence of PV stenosis in 48 patients with drug-refractory paroxysmal atrial fibrillation (AF), who underwent in our center to ablation of VPs with mixed approach: initial CB, and additional RF with irrigated catheter (25 to 35 W) to complete the gaps if it were necessary. All patients had undergone cardiac computed tomography (CT) before ablation for detailing the anatomy and ostium diameter of PVs. Between 3 and 6 months post-procedure, we performed a cardiac magnetic resonance (CT in four patients) to evaluate the possible reduction in the VPs diameter regarding the prior study conducted before the ablation procedure.

Results: Of the 158 target PVs, 40 (25%) required additional radiofrequency to complete the isolation. PVs stenosis was only observed in two PVs (1.3%), one mild and one moderate, and both veins were left inferior pulmonary veins. In the PVs with stenosis the cryoablation had been undertaken as single procedure, using a balloon of 23mm in diameter for the vein that developed mild stenosis and one of 28mm in which presented moderate stenosis. None of the stenosis provoked symptoms. There was no PVs stenosis in the group with additional RF application after the cryoablation.

Conclusions: PVs stenosis is a rare complication of atrial fibrillation ablation with cryoballoon. In our experience, additional RF application after cryoablation to achieve complete isolation of PVs was not associated with an increased incidence of stenosis.
Abstract

Introduction: Although having good initial results, during follow up recurrence rates after atrial fibrillation (AF) ablation are >30%. Ablation is recommended for patients with paroxysmal AF and nondilated left atrium (LA) but it is not uncommon to find patients with paroxysmal AF having dilated LA and with nonparoxysmal AF having nondilated LA. Our goal was to determine independent predictors of recurrence and to evaluate whether LA enlargement or persistent AF determines worse outcome.

Methods and Results: We evaluated 407 consecutive patients admitted for AF ablation from June-2005 to June-2010 pts, 23.6% female, 56±11 years. AF was paroxysmal in 69.3% (n=282), mean indexed LA volume 56±20ml/m2. FUp was made by in clinic evaluation (with ECG or 24hours Holter by protocol and driven by symptoms) and by phone interview whenever necessary. During a follow up of 21±11 months AF recurrence was 34% (139pts). Independent predictors of recurrence were female sex (OR-1.97;95%CI-1.21-3.23;p=0.007) and left atrial indexed volume over 61ml/m2 (OR-2.25;95%CI1.43-3.54;p<0.001). Type of AF at presentation was not predictor of recurrence. In patients with non dilated LA, 60 (22.4%) had non paroxysmal AF. In this subgroup, AF type at presentation had no statistic impact on recurrence (26.4%vs30.0%;p=0.62, paroxysmal vs non paroxysmal). If a patient presented with non paroxysmal AF, having a LA<61ml/m2 was associated with a significant better outcome 30% vs 56.1% (adjusted OR0.32, 95CI-0.15-0.67).

Conclusions: In our series a recurrence rate of 34% was observed during a follow up of 21±11 months. Female sex, LA indexed volume and not type of AF at presentation were independent predictor of recurrence. A LA<61ml/m2 was associated with better outcome irrespectively of AF type and thus patients presenting with non paroxysmal AF might still benefit from ablation if a non dilated LA is present. Adequate patient selection is still a main determinant to ablation success and early stages of disease characterized by lower LA volumes seem to be related with lower recurrence rates.
Abstract

Introduction: Patients with atrial fibrillation (AF) are commonly referred to electrophysiologists (EP) for management, which may include radio-frequency catheter ablation (RFA), drug therapy or both. We sought to determine whether EPs who perform AF-RFA are more likely to refer patients for this procedure compared to EPs who do not do this procedure.

Methods: The study was performed in the outpatient arrhythmia clinic of a Canadian tertiary care University hospital which performs 20 AF-RFA procedures per month. Patients referred for management of AF were initially seen by one of 5 EPs (3 performing AF-RFA and 2 who did not). All 5 EP practice in a single group. Assignment of physicians to consecutive patients was performed by randomization of physicians. The primary outcome measure was whether or not the patient was referred for AF-RFA at the time of the initial consultation.

Results: There were 128 patients seen for consultation during 10 months; 72(56%) by EP who performed AF-RFA. Patients who were seen by an AF-RFA performing EP were similar to those seen by a non-RFA EP regarding baseline characteristics including age, history of diabetes or hypertension. They had similar CHADS2, and HAS-BLED scores, similar rates of prior anti-arrhythmic drug failures and previous cardioversion. Of the patients seen by an AF-RFA performing EP, 30 (42%) were referred for ablation compared to 5 (9%) who were seen by EP who did not perform AF-RFA (p<0.0001). Patients referred for ablation by AF-RFA EPs were older (59 vs 50 years, P= 0.8), had larger LA diameter (40 vs. 37mm P = 0.6) and were less likely to have failed more than 1 anti-arrhythmic drug prior to consultation (80 vs. 100% P= 0.01) than patients referred by non-AF-RFA, EPs.

Conclusions: In a randomized evaluation, EPs performing AF-RFA were 4 times more likely to refer a patient for RFA than EPs not performing the procedure. This difference occurred even though the participating physicians shared a group practice at an academic university hospital. These data indicate that physician bias has a major impact on clinical decision-making and that there is a need for tools to make clinical decisions more consistent.
Abstract

Introduction: Catheter ablation (CA) has emerged as an effective treatment modality for atrial fibrillation (AF). However, CA for AF is a very complex procedure and is associated with several major complications including neurologic events (stroke and transient ischemic attacks), pulmonary vein (PV) stenosis, atrioesophageal fistula and pericardial effusion/tamponade. Stress cardiomyopathy (Tako-tsubo) is a unique form of reversible left ventricular (LV) dysfunction which is known to be related to conditions associated with marked sympathetic nervous activation. It is characterized by reversible LV dysfunction in the absence of coronary artery disease. Although the other complications are well recognized, to the best of our knowledge, only 2 cases of Tako-tsubo following AF CA have been reported so far. We are reporting a female patient who had Tako-tsubo cardiomyopathy following CA of AF.

Case Report: A 58 years old woman with history of symptomatic paroxysmal AF was admitted for CA. She had been experiencing AF episodes during 2 years despite propafenone treatment. Her medical history was positive with hypertension and panic disorder. Physical examination and biochemical tests were unremarkable as well as her coronary angiography that was done 3 months ago. Transthoracic echocardiography revealed normal LV function with an LV ejection fraction (EF) of 68% and slightly enlarged left atrium (diameter: 42 mm). Initial electrocardiogram, X-ray and computer tomography of the heart and lungs were normal. CA procedure was performed with the patient under sedation, using intravenous midazolam. Following transseptal catheterization, electroanatomical mapping of the left atrium and the PVs was performed using the CARTO system (BiosenseWebster, Inc., Diamond Bar, CA, USA). PVs were isolated by ablating circumferentially at the antral portion of the PVs with an externally irrigated cooled-tip catheter at 35 W. 10000 units heparin was administered intravenously after transseptal puncture and additional doses were given to keep ACT level over 350 msec. At the end of the procedure, there was no complication. Next day, her examination and ECG were normal and she was discharged from hospital. The same evening, she was re-admitted to hospital with dispnea and fatigue. On examination, her blood pressure was 70/40 mmHg and heart rate was 130 beats/min. Oxygen saturation was 70%. Inspratory rales over both lungs were remarkable by auscultation. ECG showed sinus tachycardia and negative T waves in precordial leads. Transthoracic echocardiography excluded pericardial effusion but showed apical diskinesis with LV EF of 35%. The right ventricle was normal in size and function. X-ray showed severe edema of both lungs. CT scan of the lungs showed no pulmonary emboli and PV stenosis. Acute severe heart failure was diagnosed. The patient was entubated and taken to coronary care unit where she had several episodes of ventricular tachycardia. With appropriate treatment and care, she recovered very quickly. She was extubated 2 days later and discharged 7 days later. Her EF was 50% on the third day of admission and 60% at the discharge. During a follow up of 3 months, she had no symptoms of heart failure and AF. Her EF was 60% at the follow up.

Discussion and Conclusions: In conclusion, we report a case of acute heart failure following radiofrequency CA of AF which was most probably due to Tako-tsubo cardiomyopathy. Radiofrequency CA in the PV antrum may damage autonomic ganglionated plexi, leading to vagal withdrawal, thus resulting in enhanced sympathetic tone. Furthermore, considering her panic disorder, it is possible that the increased stress level of the patient had triggered the cardiomyopathy.