

Original Article

Exchanging Catheters Over a Single Transseptal Sheath During Left Atrial Ablation is Associated with a Higher Risk for Silent Cerebral Events

Thomas Deneke, MD^{1,2}, Karin Nentwich, MD¹, Rainer Schmitt, MD³, Georgios Christopoulos, MD³, Joachim Krug, MD¹, Luigi Di Biase, MD, PhD, FHRS^{4,5,6}, Andrea Natale, MD, PhD, FHRS^{4,5}, Atilla Szollosi, MD¹, Andreas Mugge, MD, FACC², Patrick Muller, MD², Johannes W. Dietrich, MD², Dong-In Shin, MD¹, Sebastian Kerber, MD¹, Anja Schade, MD¹

¹Heart Center Bad Neustadt, Clinic for invasive Electrophysiology, Bad Neustadt, GER, ²Ruhr-University Bochum, Bochum, GER, ³Department of Radiology, Bad Neustadt, GER, ⁴Texas Cardiac Arrhythmia Institute at St. David's Medical Center, Austin, USA, ⁵Department of Biomedical Engineering, University of Texas, Austin, USA, ⁶Department of Cardiology, University of Foggia, Foggia, Italy

Address for Correspondence: Thomas Deneke, MD, Head of the Department, Clinic for Invasive Electrophysiology, Heart-Center Bad Neustadt, Salzburger Leite 1, 97616 Bad Neustadt, GER. E-mail: thomas.deneke@kardiologie-bad-neustadt.de

Abstract

Background: Silent cerebral events (SCE) have been identified on magnetic resonance imaging (MRI) in asymptomatic patients after atrial fibrillation (AF) ablation. Procedural determinants influencing the risk for SCE still remain unclear.

Objective: Comparing the risk for SCE depending on exchanges of catheters (ExCath) over a single transseptal sheath.

Methods: 88 Patients undergoing pulmonary vein isolation (PVI) only ablation using either single-tip or balloon-based technique underwent pre- and post-ablation cerebral MRI. Ablations were either performed with double transseptal access and without exchanging catheters over the transseptal sheaths (group 1: no ExCath) or after a single transseptal access and exchanges of therapeutic and diagnostic catheters (group 2: ExCath). Differences in regard to SCE rates were analyzed. Multivariate analysis was performed to identify factors related to the risk for SCE.

Results: Included patients underwent PVI using single tip irrigated radiofrequency in 41, endoscopic laser balloon in 27 and cryoballoon in 20 cases. Overall SCE were identified in 23 (26%) patients. In group 1 (no ExCath; N=46) 6 patients (13%) and in group 2 (N=42) 17 patients (40%) had documented SCE (p=0.007). The applied ablation technology did not affect SCE rate. In multivariate analysis age (OR 1.1, p=0.03) and catheter exchanges over a single transseptal sheath (OR 12.1, p=0.007) were the only independent predictors of a higher risk for SCE.

This is an open access article under the [CC BY-NC-ND license](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Conclusions: Exchanging catheters over a single transseptal access to perform left atrial ablation is associated with a significantly higher incidence of SCE compared to an ablation technique using different transseptal accesses for therapeutic and diagnostic catheters.

Key Words: Silent cerebral lesions, atrial fibrillation ablation, magnetic resonance imaging

Introduction

Cerebral infarction is a rare but devastating complication of ablation procedures to treat atrial fibrillation (AF). But symptomatic cerebral ischemia may only be the tip of the iceberg as recent studies have identified cerebral lesions in asymptomatic patients after pulmonary vein isolation (PVI) undergoing post-ablation brain magnetic resonance imaging (MRI) [1-4]. Incidences of silent cerebral events (SCE) appear to depend on ablation technology [2-6] and may be as high as 41% [4]. The clinical relevance of these post-ablation SCE still remains unclear. Different predictors of SCE have been identified but so far different procedural steps of the ablation procedure have not been evaluated in detail in regard to their potential risk [3-8]. Exchanges of catheters over a single transseptal sheath may involve a higher risk for embolic events due to manipulation of the sheath introducing air or thrombi. The present study evaluates the risk for SCE comparing left atrial ablation techniques using a single transseptal access and exchanging diagnostic and therapeutic catheters to a technique using two transseptal accesses, one for each catheter.

Methods

Patients were eligible if undergoing pulmonary vein isolation (PVI) alone for paroxysmal or short-lasting persistent AF (< 3 months sustained AF) using either single-tip radiofrequency ablation (RF) or balloon-based technologies (cryo-balloon or endoscopic assisted laser-balloon ablation) and if willing and able to undergo cerebral MRI. Patients were categorized as either having paroxysmal or persistent AF based on current guidelines. All patients underwent MRI scanning one day before and 1 to 4 days after PVI. Baseline and procedural patient data was collected including procedure duration (from puncture to sheaths out), total ablation duration, minimal and mean procedural activated clotting time (ACT), periprocedural anticoagulation management (continued oral anticoagulation, bridging using low-molecular weight heparin), echocardiographic evaluation (left atrial enlargement was defined as left atrial dimensions being out of normal values, left ventricular ejection fraction), intraprocedural cardioversion or occurrence or persistence of AF.

All patients were off anticoagulation at the day of the procedure and were bridged using low-molecular weight heparin (half body-weight adjusted dose at day of the procedure and full body-weight adjusted dose afterwards until adequate oral anticoagulation was achieved). Warfarin medication or novel oral anticoagulants were administered on day 1 after the ablation procedure if access site was clinically blunt.

All patients gave informed consent and procedures were performed after exclusion of intracardiac thrombus using transesophageal imaging. Procedures were performed under conscious sedation using propofol and via transseptal access to the left atrium in standard technique.

In both groups ablations were started only after the ACT reached ≥ 300 sec. Intraprocedurally, ACTs were controlled every 20 minutes for the course of the procedure. Minimum ACT was documented for each procedure. All transseptal sheaths were flushed continuously with a rate of 150ml/hr. In cases with exchanges of catheters over a single transseptal sheath blood was aspirated after taking catheters out and high-volume flushed (999ml/hr) until the next catheter was introduced. Care was taken to avoid any introduction of air into the transseptal apparatus.

Download English Version:

<https://daneshyari.com/en/article/2928433>

Download Persian Version:

<https://daneshyari.com/article/2928433>

[Daneshyari.com](https://daneshyari.com)