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Available Online Date/Çevrimiçi Yayın Tarihi: 10.01.2012

doi:10.5152/akd.2012.016

Catheter ablation of atrial fibrillation in a patient with unusual pulmonary vein anatomy involving right upper pulmonary vein

Sağ tavan pulmoner venini içeren olağan dışı pulmoner ven anatomili hastada atriyal fibrilasyonun kateter ablasyonu

Introduction

Available electro-anatomic mapping systems have gained applicability of radiofrequency catheter ablation (RFCA) in atrial fibrillation (AF) as a curative option in current practice. Accumulating experience emphasizes importance of imaging of left atrium and pulmonary vein (PV) anatomy prior to ablation procedures. Researches implementing sophisticated imaging methods have indicated that PV anomalies are considerably frequent. In the era of catheter ablation, these PV anomalies may complicate AF ablation procedures by resulting procedural difficulties and may be related to recurrences if they are overlooked. Hereby, we present an AF ablation procedure performed in a patient with unusual PV anatomy.

Case Report

We performed AF ablation in a 35-year-old male patient with recurrent episodes of paroxysmal AF refractory to antiarrhythmic therapy. Electro-anatomic mapping of the patient was concordant with preceding multidetector 3-dimensional computerized tomography imaging which depicted an unusual PV anatomy involving a common trunk on the left side, a supernumerary middle right PV and a right top (measured osteal diameter 10 mm) PV anomaly (Fig. 1). Cannulation of the right top PV by mapping catheter revealed PV potentials (Fig. 2). Therefore, we performed circumferential pulmonary vein isolation of the right top PV in addition to isolation of left and right sided PVs. The procedure was accomplished uneventfully by electrical isolation of all of the PVs (Fig. 2) and in the short- term follow-up the patient was asymptomatic without any complication.

Discussion

Recent evidence (1) revealing 24% rate of PV anomaly has shown that PV variants are more than expected in patients with AF. Generally, additional supernumerary PVs are more frequent on the right side, whereas the common trunk is the most seen anomaly on the left. The right top PV anomaly is relatively a peculiar anomaly detected in about 2.2% of patients whom a pulmonary computed tomography scan performed for different reasons (2) and in 4% of patients undergoing AF ablation (1). Moreover combination of these PV variants may exist too (2% of AF patients have 2 PV variants) (1). Detailed description of PV anomalies, PV ostium sizes and the branching patterns are of great importance to avoid PV stenosis associated with RFCA. Also diagnosis of additional PV variants somewhat influence long term success. If these anomalous veins are overlooked, complete isolation of PVs cannot be achieved and recurrences may occur related to active foci in these overlooked PVs. Circumferential ablation around the right top PV as a single anomaly was reported before (3), but above presented case uniquely represents successful RFCA of AF in a patient with unusual PV anatomy involving an additional active focus in right top PV.

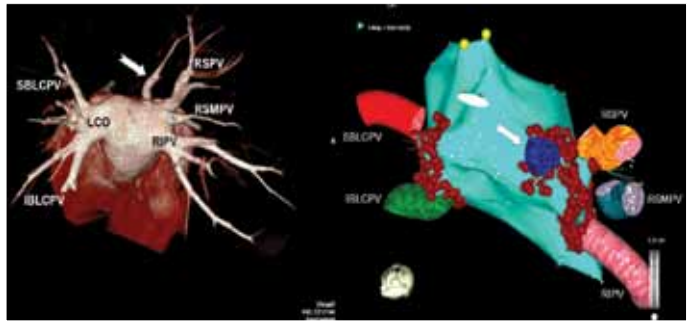

Figure 1. Three dimensional computed tomography image (left panel) and the electroanatomic mapping image (right panel) of the left atrium and pulmonary veins from superior aspect with slight posterior angulation. White arrow indicates "Right top pulmonary vein", whereas left atrial appendage is shown by yellow dots

IBLCPV-inferior branch of the left common pulmonary vein, LCO-common ostium of left pulmonary veins, RIPV-right inferior pulmonary vein, RSMPV-right supernumerary middle pulmonary vein, RSPV-right superior pulmonary vein, SBLCPV-superior branch of the left common pulmonary vein

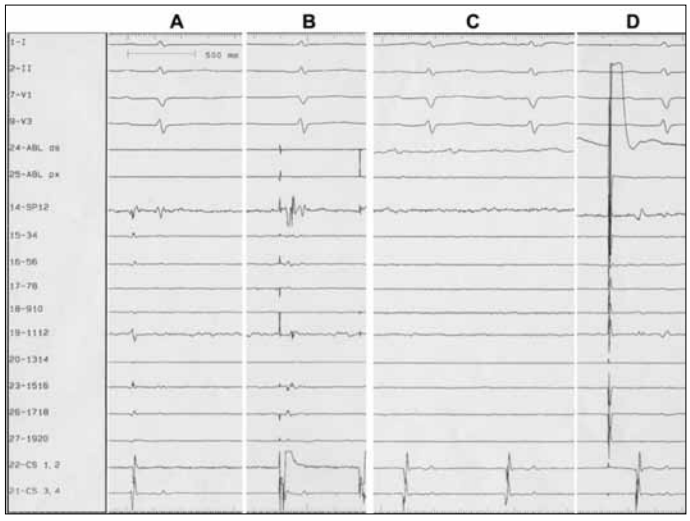

Figure 2 . Intracardiac tracings acquired by circular mapping and ablation catheter placed in the right top PV prior to ablation reveals that it as an active focus as evident by PV potentials during sinus rhythm (Column A) where the PV potentials becomes more apparent (especially in channel SP 12) by coronary sinus pacing (Column B). After circumferential ablation, right top pulmonary vein was electrically inert as evident by abolished potentials in sinus rhythm (Column C) and exit block was confirmed by noncapture during pacing from ablation catheter inside the vein (Column D)

ABL-ablation catheter, CS-coronary sinus catheter, SP 12 and other channels remarked with consecutive numbers represents individual poles of the circular mapping catheter

Conclusion

By means of the presented case, we emphasize the importance of pre-procedural imaging of PV anatomy and suggest electrical disconnection of all PV variants as far as possible. If available, utilization of an image integration system combining electro-anatomic mapping images with reconstructed 3-dimensional CT scans can offer ease and safety when performing similar complex ablation procedures.

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Available Online Date/Çevrimiçi Yayın Tarihi: 10.01.2012

doi:10.5152/akd.2012.017

Changes of high-sensitive troponin level in a patient with paroxysmal supraventricular tachycardia

Paroksismal supraventriküler taşikardili bir hastada yüksek duyarlı troponin düzeyindeki değişiklikler

Introduction

High sensitive troponin (hsTn) assays offer great opportunities to diagnose acute myocardial infarction (AMI). The demonstration of rise and/or fall of troponin (Tn) with at least one value about the 99th percentile upper than the reference limit as well as the evidence of myocardial ischemia are necessary to diagnose AMI. These days the frequency of Tn positivity in the non-acute coronary syndrome has increased resulting in more overcrowding of emergency departments. It is evident that AMI is a clinical rather than a biological diagnosis and a physician should consider the clinical content. In this study, the specific pattern of hsTn change in a patient admitted with chest pain, paroxysmal supra-ventricular tachycardia (PSVT) and ST segment depression in electrocardiogram (ECG) without coronary artery disease (CAD) would be introduced.

Case Report

A 64-year-old woman has been recently referred to our emergency department due to chest pain and narrow complex tachycardia before performing exercise tolerance test (ETT). She experienced an episodic epigastric pain intensified by physical exercise. On admission, she had substernal and epigastric pains and palpitation without any associated symptoms. On physical examination, she had no pathological finding except for tachycardia with a rate of 140 beats/min. The patient had no history of CAD and her only risk factor within past 10 years was hypertension. ECG revealed narrow complex tachycardia, ST segment depression in inferior leads, V5-V6 and ST segment elevation in aVr lead (Fig. 1) Tachyarrhythmia was cardioverted with administration of 5 mg verapamil intravenously (Fig. 2). Considering the patient's suspicious symptoms and ECG findings, hsTn was checked on admission which it showed a normal level of 3.28 ng/L [reference range <14ng/L, Coefficient of Variation (CV) <10%]. Six hours later the pronounced rising level of hsTn in the second sample (39.56 ng/L) followed by a falling pattern to 22.13ng/L in 16 hours of admission was observed (Fig. 3). The serial CK-MB mass levels were 2.2, 2.86 and 2.3 ng/ml (reference value for females < 3.77 ng/ml). Because

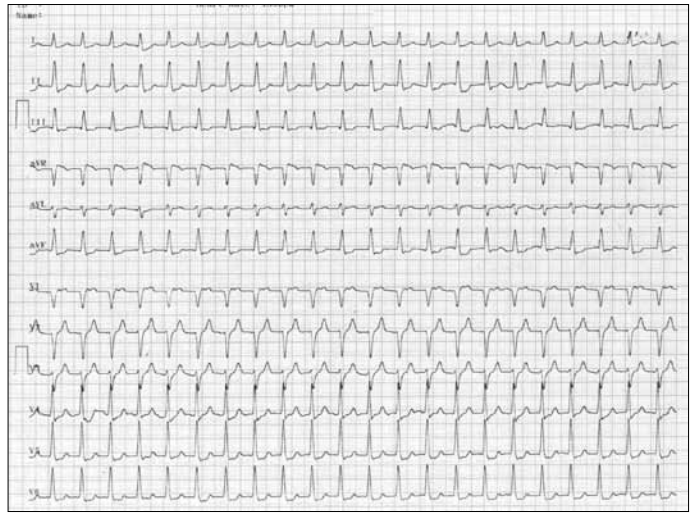

Figure 1. ECG at presentation with chest discomfort

ECG - electrocardiogram