

## Exercise-induced vasospastic angina after left atrial catheter ablation: A case report<sup>☆,☆☆</sup>

Hermann Blessberger, MD,<sup>\*</sup> Jürgen Kammler, MD, Barbara Wichert-Schmitt, MD,  
Clemens Steinwender, MD

*Department of Internal Medicine I, Cardiology, Linz General Hospital, Linz, Austria  
University-affiliated Teaching Hospital of the Medical Universities of Vienna and Innsbruck*

### Abstract

**Introduction:** Left atrial catheter ablation (LACA) is routinely used in the management of recurrent atrial fibrillation.

**Case presentation:** We report a patient suffering from vasospastic angina 2 months after a LACA procedure. Typical clinical symptoms, ST-segment changes during exercise test and successful treatment with nicorandil led to the diagnosis. According to our hypothesis, destruction of autonomic ganglia in the left atrium and resulting autonomic nerve tone imbalance might be the main determinants that have caused this phenomenon.

**Conclusion:** Coronary spasms even weeks after LACA should draw attention to a possible association with the procedure.

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### Keywords:

Vasospastic angina; Vasospasm; Left atrial catheter ablation; ST-segment elevation; Autonomic nervous system

### Introduction

Left atrial catheter ablation (LACA) is an established technique for treating drug-resistant atrial fibrillation. During this procedure, ST-segment elevations on the electrocardiogram (ECG) with concomitant chest pain symptoms can be infrequently observed when penetrating the interatrial septum or isolating the pulmonary veins.<sup>1</sup> Either peri-interventional coronary air embolism or autonomic nerve tone imbalance due to catheter manipulation were accused of being causally linked to this phenomenon.<sup>1–3</sup> However, a late onset or repeated occurrence of this complication in the weeks following the LACA procedure has not been reported so far.

### Case report

A 58-year-old male Caucasian (body mass index: 30.4 kg/m<sup>2</sup>, non-smoker) was admitted to our department

to undergo a LACA procedure because of drug-resistant paroxysmal atrial fibrillation. Coronary heart disease had been ruled out previously by coronary computed tomography (64-row technology). A drug therapy comprising sotalol 80 mg three times daily and phenprocoumon (target INR between 2.0 and 3.0) had been commenced months ago. However, sotalol therapy had been unable to prevent recurrent attacks of atrial fibrillation. Apart from atrial fibrillation, the patient's medical history was unremarkable.

The LACA procedure was performed in sedoanalgesia via uncomplicated transseptal puncture of the interatrial septum. After initiation of sufficient heparin anticoagulation and computer-based three-dimensional electro-anatomic mapping with EnSite NavX<sup>®</sup> (St. Jude Medical Inc., St. Paul, MN, USA), both the left and the right pairs of pulmonary veins were encircled by using an irrigated tip radiofrequency ablation catheter (Therapy<sup>®</sup> Cool Path<sup>®</sup> Irrigated Ablation Catheter, St. Jude Medical Inc.). Ablation was performed with a maximum temperature of 42 °C and a power limit of 30 W. Finally, success of LACA was proven by the presence of an entrance and exit block. The clinical course following the LACA procedure was uncomplicated.

After 2 months the patient was re-admitted to our department due to recurrent exercise-induced chest pain that was reversible upon resting. Symptoms had been experienced first one month after the LACA procedure. At re-admission the patient's medication still comprised sotalol

<sup>☆</sup> Conflict of interest: The authors declare that there is no known conflict of interest.

<sup>☆☆</sup> Financial support: None.

<sup>\*</sup> Corresponding author. Hermann Blessberger, MD, Department of Internal Medicine I (Cardiology), Linz General Hospital (AKH Linz), Krankenhausstr. 9, 4020 Linz, Austria.

E-mail address: [hermann.blessberger@akh.linz.at](mailto:hermann.blessberger@akh.linz.at)

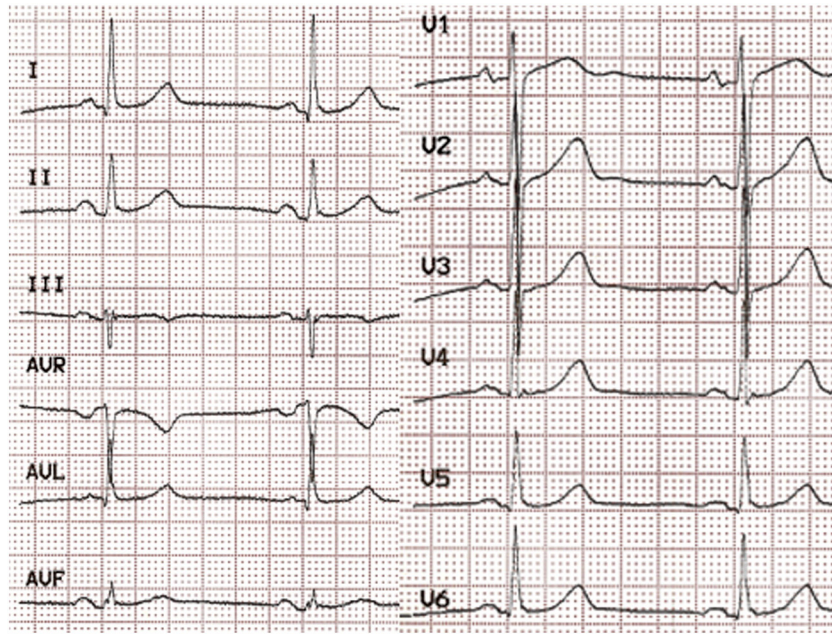


Fig. 1. Standard 12-lead baseline ECG at the patient's admission to hospital. Color illustration online.

80 mg three times daily and phenprocoumon (INR between 2.0 and 3.0). Both drugs were continued after LACA, serving as an antiarrhythmic and antithrombotic prophylaxis, respectively (for baseline ECG at admission see Fig. 1).

Bicycle ergometry was chosen to further investigate the exertional anginal attacks. Indeed, testing had to be stopped at 125 W (75% of target workload) because of severe chest pain, pallor, sweating and dizziness. The ECG showed ST-

segment elevations (0.2 mV) as well as a disappearance of the S wave—both indicative of myocardial ischemia—in leads  $V_1$ – $V_3$  that were reversible upon 5-minute resting (Fig. 2). Heart rate (86 beats per minute, 53% of target heart rate) and blood pressure (161/93 mm Hg) remained within normal ranges as compared to workload. Serum levels of cardiac enzymes and troponin T repeatedly remained within normal ranges in the 24 hours after the exercise test. A

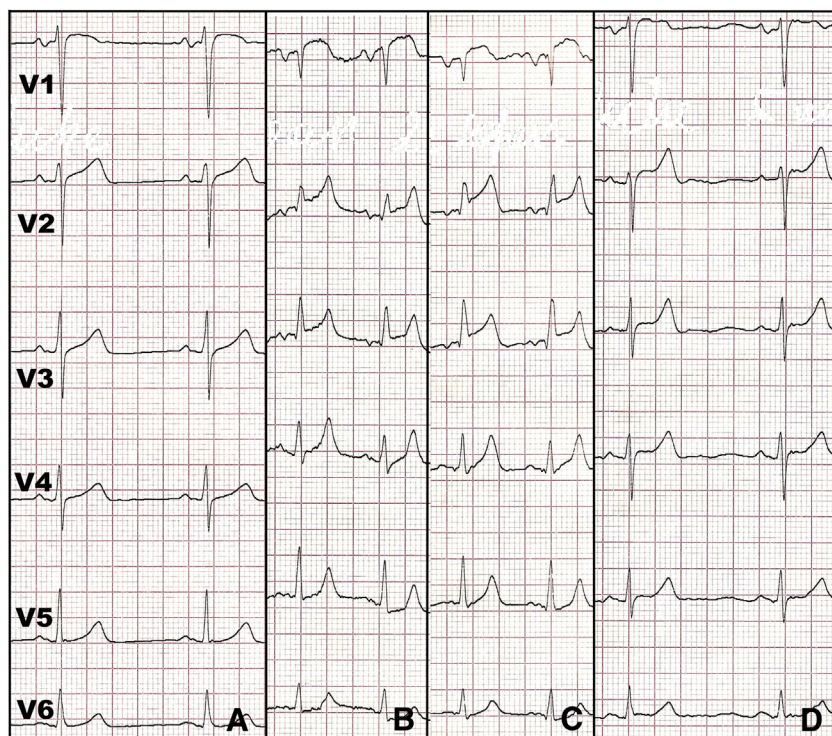


Fig. 2. ECG strips (leads  $V_1$ – $V_6$ ) obtained at rest (A), at 125 W workload (B), immediately after cessation of exercise (C) and after a 5-minute interval of recovery (D). At 125 W workload ST-segment elevations as well as a disappearance of the S wave occurred in leads  $V_1$ – $V_3$  (B). While still present immediately after stopping exercise (C), these ECG changes virtually completely resolved after a resting period of five minutes (D). Color illustration online.

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