

Tako-tsubo cardiomyopathy following catheter ablation of atrial fibrillation

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Tako-tsubo cardiomyopathy is characterized by reversible left ventricular dysfunction following emotional or surgical stress. Unlike the well-known complications of catheter ablation (CA) of atrial fibrillation (AF), Tako-tsubo cardiomyopathy has been rarely reported so far. We report a case of acute reversible left heart failure following successful CA of paroxysmal AF in a patient with a history of panic disorder.

Catheter ablation (CA) has emerged as an effective strategy for AF. However, CA of AF is a complex procedure associated with several complications. Stress-induced (Tako-tsubo) cardiomyopathy is a unique form of reversible left ventricular (LV) dysfunction related to conditions associated with sympathetic nervous system activation in the absence of coronary artery disease. To the best of our knowledge, Tako-tsubo cardiomyopathy following CA of AF has been rarely reported.¹

A 58-year-old woman with paroxysmal AF episodes was admitted for CA. She had been experiencing significant symptoms during AF episodes despite antiarrhythmic medication. She was post-menopausal also having hypertension and panic disorders. Her electrocardiogram (ECG) and biochemical tests were unremarkable. She had coronary angiography that revealed normal coronary arteries. On transthoracic echocardiography (TTE), she had normal LV function (EF: 68%) and slightly enlarged left atrium (42 mm) with no structural abnormality. Computed tomography of the heart and lungs was also normal. Catheter ablation procedure was started under sedation with midazolam. 10 000 IU of heparin was administered after transseptal puncture with additional doses to keep activated coagulation time level over 350 during the procedure. Electroanatomical mapping of the left atrium and the pulmonary veins (PVs) was done using the CARTO system (BiosenseWebster, Inc.). Pulmonary veins were isolated by circumferentially ablating the antral portion of the PVs with an externally irrigated cooled-tip catheter at 35 W. The procedure was completed successfully without any complications, provided that the patient was free of symptoms with a normal ECG.

During the hospital stay, she developed progressive dyspnoea. She was desaturated having inspiratory rales over both lung fields. Electrocardiogram showed sinus tachycardia and new onset negative T waves in the precordial leads. On TTE, LVEF was 35% showing wide apical dyskinesia with preserved function of basal segments. The right ventricle was normal in size and no pericardial effusion was detected. Computed tomography scan of the lungs showed interstitial oedema and excluded pulmonary emboli and PV stenosis. The patient underwent coronary angiography with ventriculography that revealed normal coronary arteries along with typical apical ballooning characteristic for Tako-tsubo cardiomyopathy (Figure 1A and B). The patient was taken to the coronary care unit where she received appropriate therapy for acute heart failure and stabilized in a few hours. She had a full recovery in 3 days. Transthoracic echocardiography showed normal LV function before discharge. During a 6-month follow-up, she was free of symptoms and remained in sinus rhythm with an EF of 60%.



Figure 1 Left ventriculography in the right anterior oblique view demonstrating typical apical ballooning. (A) diastole, (B) systole.

In the literature, stress-induced cardiomyopathy has been reported following several ablation procedures.^{2,3} However, Tako-tsubo cardiomyopathy after PV isolation is relatively rare.¹ Catheter ablation in the PV antrum may have damaged the autonomic ganglionated plexi leading to vagal withdrawal, thus resulting in enhanced sympathetic tone, as previously reported.² Furthermore, considering her panic disorder as well as the procedure itself, increased level of emotional stress may also have generated substrates for this complication.

Conflict of interest: none declared.

References

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