Severe multiple coronary artery spasm associated with pulmonary vein isolation: A case report

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Introduction: Coronary artery spasm is a rare complication associated with pulmonary vein isolation (PVI). We experienced a case of severe multiple coronary artery spasm that was induced by PVI in the patient with paroxysmal atrial fibrillation (AF).

Methods: The patient was 78 years old male, who have a history of coronary stenting for angina and CRT-D implanted for dilated cardiomyopathy, was admitted to undergo the catheter ablation for symptomatic paroxysmal AF.

Result: All procedures were performed under general anesthesia. After a trans-septal puncture, we started extensive PVI from left PV. During radiofrequency (RF) application to the left PV, ST segment elevation was observed in precordial and inferior leads. Since ST segment elevation was resolved by interruption of RF application, we continued and successfully completed the left PVI. Thereafter, we proceeded to the right PVI. However, during RF application to posterior side in the right PV, ST segment level was elevated again in precordial and inferior leads, followed by a hemodynamic collapse. We immediately performed coronary angiography, which revealed severe coronary artery spasm in the both right and left coronary arteries. Intra-coronary injection of nicorandil and nitroglycerin was successfully ameliorated coronary spasm, stabilizing the hemodynamics. Finally, we completed bilateral PVI under systemic infusion of nicorandil and nitroglycerin. After the PVI procedure, coronary artery spasm did not recur under the administration of Ca channel blocker and nicorandil.

Conclusion: In this case, coronary artery spasm was caused by various factors including autonomic tone imbalance, anesthesia and thermal injury. It is difficult to anticipate coronary artery spasm during PVI. Early detection of coronary artery spasm is necessary for avoiding hemodynamic collapse.