Successful Catheter Ablation for Polymorphic Ventricular Tachycardia guided by 12-lead 24-hour Holter Electrocardiography

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Introduction: N/A

Methods: N/A

Result: A 58 year-old female with syncope was taken to our hospital and was observed with continuous electrocardiographic monitoring. Premature ventricular contractions (PVCs) with identical morphology followed by polymorphic ventricular tachycardia (VT) sporadically occurred. The clinical PVC and VT were not recorded in 12-lead but in one-lead electrocardiography (ECG). Although detailed waveforms of the arrhythmia were uncertain, catheter ablation targeting the identical PVC triggering polymorphic VT was conducted. Despite repeated induction pacing protocols with and without isoproterenol and adenosine triphosphate, the target PVC could never be induced during procedure and the session ended without radiofrequency application. One year later, syncopal episodes recurred and she was readmitted to our hospital. In order to detect the arrhythmia events causing syncope, 12-lead 24-hour Holter ambulatory ECG was performed and the data were urgently analyzed. The Holter recording revealed the clinical VT initiating with the identical PVC, which was thought to originate from inferior right ventricle. After data analysis of the Holter ECG, catheter ablation was conducted. Just like in the first ablation session, clinical arrhythmia was never induced in spite of earnest efforts at induction maneuvers. Therefore, using the result of 12-lead 24-hour Holter ECG as a guide, we performed pace-mapping. A QRS configuration of the paced beat from the inferior site of the right ventricle was almost identical to that of the target PVC recorded in the Holter ECG (Figure). Radiofrequency energy was delivered to the site with good pace-map and its adjacent region (Figure). She discharged without an implantable cardioverter defibrillator or antiarrhythmic agents and has had no episode of syncope or palpitation until now.

Conclusion: We experienced a case with polymorphic VT triggered by PVC which was successfully ablated with 12-lead Holter ECG as a guide.