Catheter Ablation to a Patient of Idiopathic Ventricular Fibrillation Targeted the Initiating Premature Ventricular Complex

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Introduction: A 47-year-old woman fell unconscious in the elementary school classroom. Her colleague provided cardiopulmonary resuscitation and called an ambulance. After the ambulance arrived, ventricular fibrillation (VF) was detected on an automatic external defibrillator (AED). VF was terminated with twice electrical cardioversions.

Methods: She was taken to our hospital by an ambulance. A surface ECG showed frequent premature ventricular complexes (PVCs) of right ventricular outflow tract (RVOT) origin. There were no abnormal findings producing unconsciousness in brain and chest CT. She underwent a coronary angiography, but there was no significant coronary stenosis. Left ventriculography showed a regional hypokinesia of left ventricular wall due to electrical cardioversions and ejection fraction was calculated at 0.58. After she received therapeutic hypothermia, she was recovered including higher cerebral function. Twelve days after admission, she received ICD. Frequent PVCs and non-sustained VTs were observed on remote monitoring system, but sustained arrhythmia was not observed. Approximately six months after discharged our hospital, we noted VF episode that self-terminated. These ventricular arrhythmias were medically refractory, so catheter ablation targeted the initiating PVC was performed approximately 15 months after documented VF episode. Because PVCs seemed to be origination from RVOT, Multielectrode array was inserted into right femoral vein and deployed in the RVOT as guided by fluoroscopy. The 3D geometry of RVOT was constructed by navigating the mapping and ablation catheter within the RVOT using the non-contact electroanatomic mapping system. Spontaneous PVC that originating from postero-septal site in RVOT was recorded. At early activation site, pacemapping was performed and it seemed perfect matching on the 12-lead ECG. Ablation was performed by delivering radiofrequency energy with the ablation catheter in temperature-control mode.

Result: Because the PVC was eliminated during the ablation and became non-inducibility with programmed electrical stimulation with isoprenaline infusion, the ablation procedure was considered successful.

Conclusion: After successful ablation, sustained and no-sustained arrhythmia were not observed and little PVCs were documented on remote monitoring system.