Failure of Cardiac Resynchronization Therapy in a Patient with Abnormal Location of Coronary Sinus Ostium

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Introduction: Cardiac resynchronization therapy (CRT) has become an effective treatment of advanced heart failure with New York Heart Association (NYHA) Class II-IV symptoms, sinus rhythm, left ventricular ejection fraction (LVEF) below 35% and left bundle branch block (LBBB, QRS duration ≥ 150ms) despite optimal medical treatment. In CRT procedure, LV lead implantation via the coronary sinus (CS) has been limited by individual patients’ unique anatomic variations and an abnormal location of CS can make CRT implantation technically challenging. Herein, we report one case of CRT implanting failure due to abnormal CS location.

Methods: Case presentation: A 64-years old man with non-ischemic dilated cardiomyopathy, severe LV systolic dysfunction (LVEF: 15%), LBBB with QRS duration 182 msec and NYHA class II symptoms was referred to our hospital. Despite we followed him up for 8 months with optimal medication, there was no interval change in LV systolic function and electrocardiogram (ECG) finding. And ventricular tachycardia event was confirmed in follow-up ECG and a 24-hours holter monitoring. Therefore, we decided to implant CRT-defibrillator (CRT-D) for him.

Result: He gave informed consent and overnight fast. Under conscious sedation, we punctured left subclavian vein. After delivering right ventricle (RV) lead (Intica 7 VR-T, Biotronik), it was very difficult to cannulate the LV lead into CS. We tried CS cannulation using long intravascular sheath (Biotronik) but CS was not seen when the contrast was administered at usual location of CS cannulation. After trying to cannulation several times, we eventually failed to identify the CS ostium. To confirm the location of CS ostium, we performed coronary angiography. During washout phase, we found the CS ostium in the right atrium (RA) posterolateral area with acute angle running (Figure 1). We stopped to trying to deliver the LV lead into CS and implanted single chamber implantable cardioverter defibrillator (ICD, Plexa ProMRI S 65, Biotronik). ICD insertion was successful.

Conclusion: Coronary sinus anatomy is important factor of CRT implantation.