Epicardial Ablation of Refractory Ventricular Tachycardia in a Young Athletic Man Diagnosed with Arrhythmogenic Right Ventricular Cardiomyopathy and Kommerell's Diverticulum: A Rare Case

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**Introduction**: We present the case of a 31-year-old athletic man who had repeated emergency department visits due to palpitations and dizziness. ECG showed wide complex ventricular tachycardia (VT) with left bundle branch block pattern with inferior axis. After pharmacologic cardioversion, there was T wave inversion in V1-V4 with prominent epsilon wave in V1. Cardiac magnetic resonance imaging revealed that the right ventricle is dilated with depressed systolic function, and small, dyskinetic aneurysms with delayed hyperenhancement of the apex. The left ventricle is normal-sized with normal resting systolic function. There is also an incidental finding of a right-sided aortic arch with Kommerell's diverticulum. Based on the revised Task Force criteria, above findings are suggestive of arrhythmogenic right ventricular cardiomyopathy (ARVC) but his genetic testing only 50 to 60% attribute to ARVC. He underwent implantation of a dual chamber intracardiac cardioverter-defibrillator (ICD) and on maximum anti-arrhythmic agents. Due to persistent VT and frequent ICD shocks, epicardial radiofrequency ablation (RFA) was contemplated. Endocardium showed normal voltage despite MRI findings. Sinus rhythm voltage map showed low voltage area of the entire RV epicardium while endocardial sinus rhythm voltage map demonstrated normal voltage. Sinus rhythm activation map showed two regions of latent activation consistent of the entrance and exit site areas shown in the VT activation map. During VT, mid-diastolic potential were noted in the protected isthmus which was intramyocardial in location. VT was successfully terminated within 5 seconds of radiofrequency application in this area.

**Methods**: n/a

**Result**: n/a

**Conclusion**: ARVC is a progressive disease characterized by fibrofatty replacement of the myocardium with high predisposition to ventricular tachycardia (VT) and sudden cardiac death (SCD). To date, there has been no published literature describing the coincidence of ARVC and Kommerell's diverticulum. Also, our case disputes the existing knowledge of having abnormal endocardial voltage map congruent with the MRI findings in ARVC, which has lead us to an epicardial-only VT ablation. These data justify the need to report our case. Long term follow-up of our patient is warranted to provide possible missing data on arrhythmic risk in these group of patients.