Arrhythmogenic Right Ventricular Cardiomyopathy: Is Coxsackie the Criminal?

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Introduction: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is an inherited cardiomyopathy characterized by right ventricular dysfunction, which can precipitate sudden cardiac death in young adults.

Case Presentation: A 22-year-old Hispanic male with PMH of hypertriglyceridemia and exertional syncopal episodes was brought to the ED after experiencing a sudden cardiac arrest while on the treadmill. On arrival, patient was intubated and placed on a defibrillator which detected Vfib with torsade de pointes. On arrival to ED, initial ECG revealed 1-2 mm ST depressions in leads II, III and aVF and incomplete RBBB. Chest XR showed water-bottle shaped cardiac silhouette. Coronary angiography demonstrated patent coronary arteries. Subsequently 2D echo was performed which showed severe enlargement of RV with EF of 30-35% and RV free wall akinesis. The only pertinent positives were Coxsackie A and B antibodies with titers as high as 1:1600 in Coxsackie A Ab. The patient met the 2010 Task Force Criteria for ARVC including 1 major criteria by 2D echo and 2 major criteria by ECG. The first major criteria met was regional RV akinesia and increased RV dimensions in end-diastole of PLAX RVOT >32mm and/or PSAX RVOT >36 mm. The second major criteria met was inverted T-waves in V1, V2 and V3 in the absence of complete RBBB. Lastly, the third major criteria met, was presence of VT of left bundle branch morphology with superior axis.

Conclusion: This case highlights the uncertainty behind the pathogenesis of ARVC and the role that cardiotropic viruses such as Coxsackie plays in the pathophysiology of this disease.