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Clinical impact of cardiovascular magnetic resonance in evaluation for possible arrhythmogenic right ventricular dysplasia/ cardiomyopathy

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Background

This study examined the impact of CMR on clinical management in patients with undergoing evaluation for arrhythmogenic right ventricular dysplasia/cardiomyopathy(ARVD/C).

Methods

Patients referred for assessment of ARVD/C were evaluated. Using 2010 ARVD/C Task Force criteria, clinical history, family history, ECG and other test results were evaluated with and without CMR findings to determine definite, borderline or possible ARVD/C. CMR included assessment of right ventricular(RV) size, function, and regional wall motion(RWM). For alternative diagnoses, tissue characterization and late gadolinium enhancement were routinely performed. Qp:Qs was performed when intracardiac shunt was suspected by the supervising physician.

Results

311 consecutive patients (mean age 45±14 years, 53% male) were included. Prior to CMR, patients were classified as definite (n=1), borderline (n=1) or possible ARVD (n=18, Table). After CMR, 6(2%) were diagnosed with

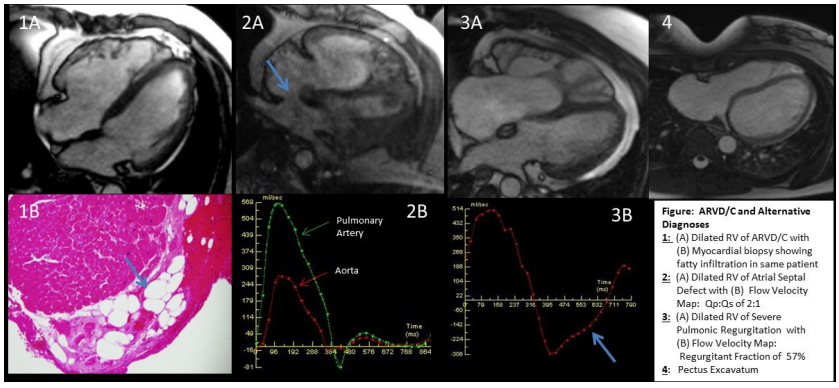

Figure 1

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Table 1 Clinical Impact of CMR on Diagnosis of ARVD/C vs. Alternative Diagnoses

n=311	2010 Guidelines without CMR Findings, n (%)	2010 Guidelines with CMR Findings, n (%)
Definite Criteria for ARVD/C	1 (0.3)	6 (2)
Borderline Criteria for ARVD/C	1 (0.3)	5 (2)
Possible Criteria for ARVD/C	18 (5.8)	9 (3)
Patients with 1 or no Minor Criteria, not meeting 2010 Guidelines Definition of \"Definite\", \"Borderline\" or \"Possible\"	291 (93.6)	51 (16) Alternate Diagnosis* 76 (24) RV Enlargement Alone** 164 (53) Normal RV***

* Alternative Diagnosis Resulting in Change in Management included 6 (1.9%) Intracardiac shunts, other Cardiomyopathy or RV Overload State 36 (11.5%), or Other Diagnosis 9 (2.8%)

**RV Enlargement Alone with normal RV Function and Regional Wall Motion

*** Normal RV Function, Size and Regional Wall Motion by CMR

definite ARVD/C and underwent defibrillator implantation, 5(2%) were classified as borderline ARVD/C, and 9 (3%) remained possible ARVD/C. 51(16%) had alternative diagnoses (Figure/Table), resulting in a management change: 6(1.9%) patients had intracardiac shunt, 36(11.5%) had another cardiomyopathy or RV overload state, and 9(2.8%) had other diagnoses. 76(24%) had RV enlargement alone with normal RV function and absent RWM by CMR while 164(53%) without other major criteria had normal RV function, size, and RWM.

Conclusions

CMR impacted clinical management by contributing to the diagnosis of definite or borderline ARVD/C in 4% of patients and by excluding the presence of significant RV dysfunction, enlargement, and RWM in over half of patients. CMR identified important alternative diagnoses in 16%.

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