

Oral presentation

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Prognostic CMR predictors of adverse outcomes in patients with suspected ARVC

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Objective

To assess the diagnostic accuracy of CMR parameters in predicting future major cardiovascular adverse events (MACE) in patients with suspected arrhythmogenic right ventricular cardiomyopathy (ARVC).

Background

ARVC is one of the commonest causes of sudden cardiac death amongst people younger than 30 years. Establishing the diagnosis still remains a difficult task, since there is as yet no single non-invasive gold standard test to confirm it. It is therefore essential to identify within a population with suspected ARVC, a subset who will indeed be at a higher risk of developing the disease, and thus at a higher risk of MACE. Imaging criteria that are most commonly studied include right ventricular volumes, ejection fraction and regional wall motion abnormalities. We sought to determine which imaging parameters were better predictors of worse clinical outcomes.

Methods

We included 379 consecutive patients referred for CMR examination between 2002 and 2005, with suspected ARVC based on at least one minor criterion as defined by the Task Force Criteria. Patients were classified according to their initial scans as either "normal" or "abnormal". Scans were abnormal if RV end-diastolic volume (RVEDV) was increased, or RV ejection fraction (RVEF) was decreased, or late gadolinium enhancement of the LV

(LVLGE) or RV (RVLGE) was present. Cut-off values for normal versus abnormal RVEDV and RVEF were based on previously published reference ranges indexed for BSA and adjusted for age, from our institution. Follow-up data was obtained in 2009 for all patients, and reviewed by two independent researchers. MACE were all cause-mortality, occurrence of life-threatening arrhythmias, appropriate ICD discharge, and unplanned hospital admission for cardiovascular events. Cox proportional hazards analysis was performed to assess the excess risk associated with each CMR variable.

Results

The average age was 43.6 ± 15.8 years; 199 were males (52.5%). 61 patients (16%) had increased RVEDV at baseline examination, 90 had decreased RVEF (24%), 19 had LVLGE, and 6 had RVLGE. The positive predictive value for MACE was 21% for RVEDV, 22% for RVEF, 26% for LVLGE and 33% for RVLGE. The hazards ratio was statistically significant for RVEF [2.05 (95% CI 1.14-3.67; p value 0.016)] only.

Conclusion

Each of these imaging parameters tends to predict worse clinical outcomes in patients referred for suspected ARVC, regardless of whether the actual diagnosis of ARVC is established or not. However, amongst these, decreased RVEF is significantly associated with an increased risk of major adverse cardiovascular events.