EACVI
European Association of Cardiovascular Imaging

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC): An AHP Guide

Introduction

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) is a genetically determined myocardial disease characterized by fibrofatty replacement of the right ventricular myocardium, leading to arrhythmias, ventricular dysfunction, and sudden cardiac death, particularly in young individuals and athletes. CMR plays a pivotal role in the assessment of structural and functional abnormalities of the right ventricle.

For allied health professionals, attention to detailed right ventricular imaging, fat detection, and late gadolinium enhancement (LGE) is critical. Due to the subtle and segmental nature of ARVC, high-quality imaging and thorough protocol adherence are essential.

CMR Protocol

Step	Sequence / Technique	Purpose / Notes
1	Anatomy (Localizers)	Scout images to plan cardiac views
2	LV Function – Cine SSFP	SA stack + long axis views for baseline LV assessment
3	RV Function – Cine SSFP	Transaxial stack + RVOT views, 6–8 mm slices, no inter-slice gap
4	T1-weighted Axial Black Blood	Optional; to detect fat infiltration (pre-contrast)
5	T1-weighted Axial Fat-Suppressed	Optional; improved detection of fatty infiltration

6	Late Gadolinium Enhancement (LGE)	Use same orientations; ensure appropriate nulling of RV myocardium

Reporting Checklist

- LV: EDV, ESV, SV, EF, longitudinal function, mass (indexed to BSA)
- RV: EDV, ESV, SV, EF, longitudinal function (indexed to BSA)
- Regional RV wall motion abnormalities (inflow, apex, outflow)
- Morphological abnormalities: aneurysms, outpouchings
- Presence of fatty infiltration in RV or LV myocardium
- Presence and distribution of myocardial fibrosis (LGE)

Key Points

- Diagnosis must be based on 2010 Modified Task Force Criteria—CMR findings alone are not sufficient.
- Wall motion abnormalities at the moderator band insertion are common in healthy subjects and not specific.
- Volume measurements and detection of regional RV dysfunction are essential.
- Fat infiltration should be interpreted cautiously; corroboration with histology or genetics is important.
- LGE may be subtle and located in the RV free wall or LV lateral wall in a non-ischaemic pattern.

Tips & Tricks for Allied Health Professionals

- Ensure thin-slice, contiguous transaxial stacks for optimal RV assessment.
- Use fat suppression and black blood imaging when available to support fatty infiltration assessment.
- Tailor LGE inversion time to null RV myocardium correctly.
- Cross-check cine imaging in RVOT views to detect regional akinesia or dyskinesia.
- Always integrate clinical data—ECG findings, arrhythmia history, and family history strengthen diagnostic context.

Reference: Herzog, B. A., Greenwood, J. P., Plein, S., Garg, P., Haaf, P., & Onciul, S. (2017). Cardiovascular magnetic resonance pocket guide. *Eur Soc Cardiol*.