



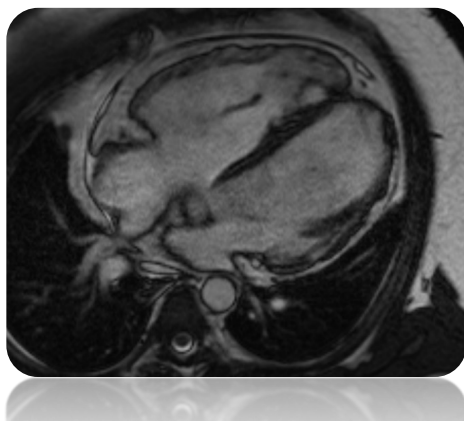
# Cardiac MRI Essentials

## Arrhythmogenic right ventricular cardiomyopathy (ARVC)

- ARVC is an autosomal dominant condition
- Prevalence between 1 in 2,000 and 1 in 5,000
- Characterized by fibro-fatty replacement of the right ventricular myocardium
- Can lead to ventricular arrhythmias with a right ventricular origin
- ARVC is a common cause of sudden cardiac death in the young

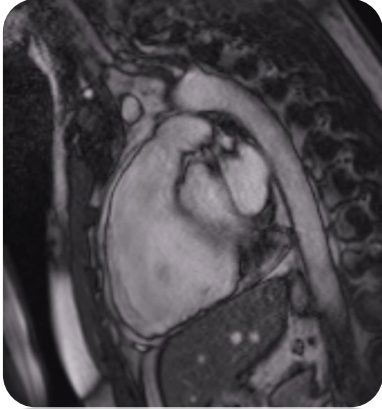
## ARVC is diagnosed using Task Force Criteria (2010)

- See *Further Reading* for details of the criteria and how they are used
- CMR diagnostic criteria are divided into major and minor:
- **Major CMR criteria**
  - Regional RV akinesia or dyskinesia or dyssynchronous RV contraction  
AND one of the following:
    - RV EDV/BSA  $\geq 110$  mL/m<sup>2</sup> (male) or  $\geq 100$  mL/m<sup>2</sup> (female)
    - RV ejection fraction  $\leq 40\%$
- **Minor CMR criteria**
  - Regional RV akinesia or dyskinesia or dyssynchronous RV contraction  
AND one of the following:
    - RV EDV/BSA  $\geq 100$ – $110$  mL/m<sup>2</sup> (male) or  $\geq 90$ – $100$  mL/m<sup>2</sup> (female)
    - RV ejection fraction  $>40$  to  $\leq 45\%$



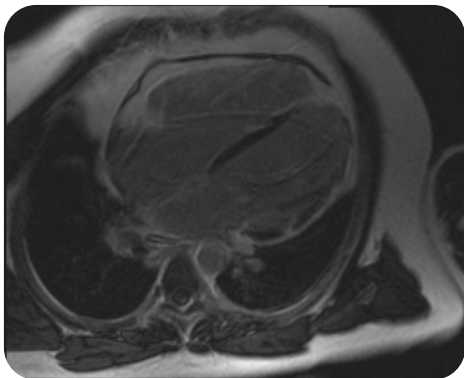
### ARVC: 4-chamber view

- Dilated right ventricle
- Abnormal appearance to RV myocardium with regional wall motion abnormalities on cine CMR



### ARVC: RVOT view

- An ARVC study should include multiple cine CMR views of the right ventricle
- RVOT view is shown here
- Assess regional wall motion carefully in every view



### ARVC: Late gadolinium enhancement

- Shows evidence of myocardial fibrosis affecting the right ventricle
- Also evidence of left ventricular involvement

### How do we assess ARVC with CMR?

CMR assessment in ARVC should include:

- Standard anatomical cine views
- RV inflow/outflow and RVOT views
- SA and transaxial cine stack
  - Quantify RVEDV and RVESV
  - Calculate RV SV and RV EF
- Black blood images with/without fat saturation
- Late gadolinium enhancement
  - RV fibrosis.

### Further reading

Diagnosis of arrhythmogenic right ventricular cardiomyopathy/dysplasia. *Circulation* 2010; **121**: 1533-1541 [[click here to access online](#)]