

Points

Cardiac MRI today is the gold standard for the assessment of

- Myocardial viability
- Dilated cardiomyopathy
- Inflammatory and infiltrative cardiomyopathies
- Hypertrophic cardiomyopathy

The Power of Cardiac MRI

Cardiac MRI (CMR) is an excellent tool for assessing myocardial muscle, apart from its other indications, related to the pericardium and valves.

Today, the state-of-the-art indications for CMR are the following:

1. Myocardial viability
2. Dilated cardiomyopathy
3. Inflammatory and infiltrative cardiomyopathies
4. Hypertrophic cardiomyopathy

1. Myocardial viability

In patients who have already infarcted, it is necessary to know whether there is enough viable myocardium available, prior to

attempting revascularization. There is enough data to suggest that if the myocardium is non-viable, then there is no point doing a bypass or stenting the affected artery.

As Figure 1 shows, CMR has the ability to differentiate myocardial and non-viable myocardium extremely well and is today considered the gold standard for this. Not only is it quick to perform (35 minutes), it also does not require the use of stress.

2. Dilated cardiomyopathy

In young patients who suddenly present with reduced ejection fraction, it is important to know whether the cardiomyopathy is ischemic or whether it represents an idiopathic dilated cardiomyopathy (DCM), as occurs after a viral myocarditis (Figure 2).

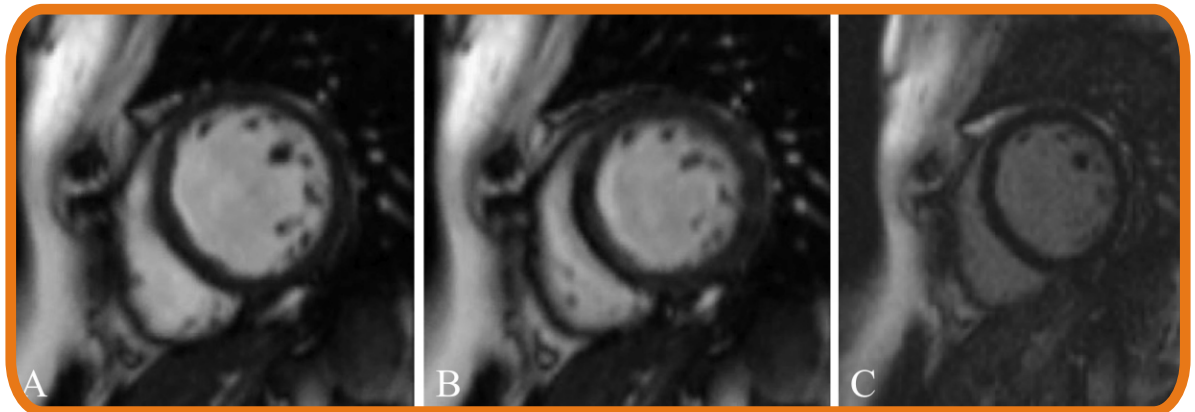


Fig. 1

Fig. 1: Myocardial viability. Diastolic (A) and systolic (B) short-axis images from a cine video file show marked akinesia of the antero-septal wall (arrows), while the rest of the segments show good contractility and thickening. The delayed contrast-enhanced image shows complete absence of enhancement (arrow), suggestive viable, hibernating myocardium. An angiogram revealed a mid-LAD stenosis, which was successfully stented. After 3 months, a repeat echocardiogram showed complete normality of function.

The online version is up at <http://www.jankharia.com/innerspaces/current.htm>



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3. Inflammatory and infiltrative cardiomyopathies

In patients who have abnormal ectopics or who present with supraventricular or right ventricular tachycardias, it is important to know whether there is a structural cause for this. CMR is the most sensitive tool available today for diagnosing myocardial pathology (Figure 3).

2. Hypertrophic cardiomyopathy (HCM)

In patients with HCM, the presence of abnormal delayed hyperenhancement is suggestive of necrosis and fibrosis and carries an increased incidence of sudden cardiac death. This helps decide further appropriate management (Figure 4).

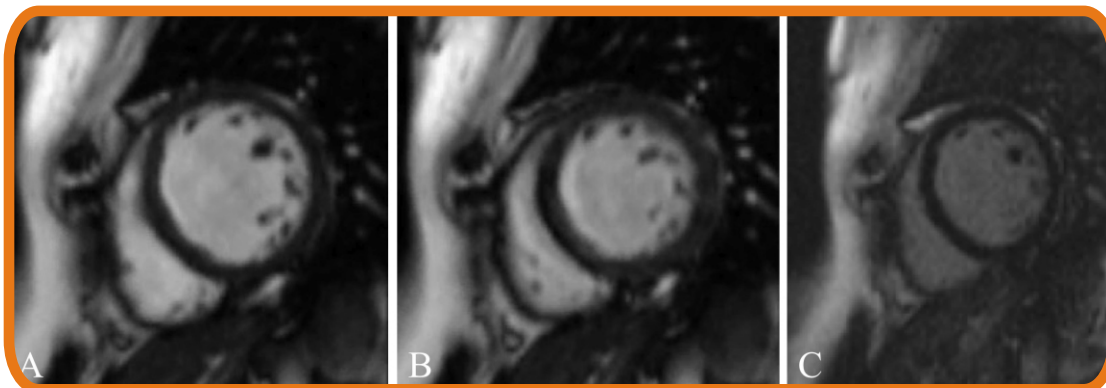


Fig. 2

Fig. 2: Dilated cardiomyopathy (DCM). Diastolic (A) and systolic (B) short-axis images from a cine video file show moderate diffuse hypokinesia. The delayed contrast-enhanced image shows complete absence of any enhancement, which is highly suggestive of idiopathic DCM.

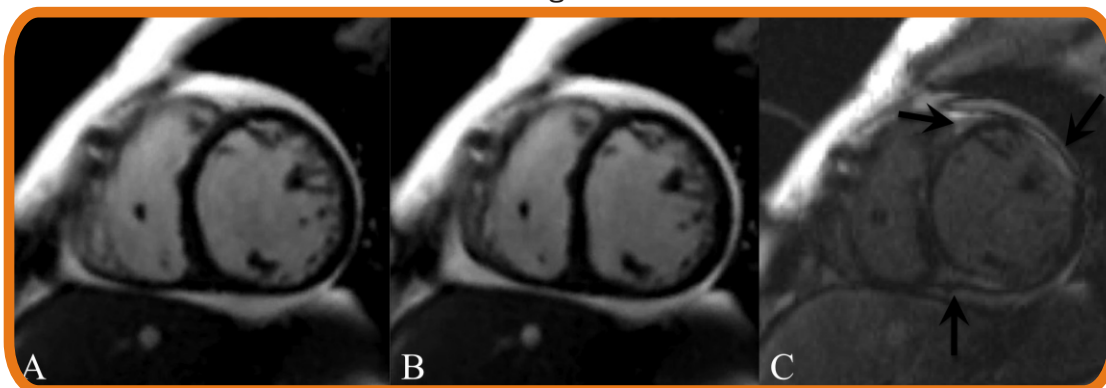


Fig. 3

Fig. 3: Inflammatory cardiomyopathy. Diastolic (A) and systolic (B) short-axis images from a cine video file show significant, asymmetric hypokinesia of virtually all segments. The delayed contrast-enhanced image shows patchy areas of mid-myocardial and epicardial enhancement (arrows), suggestive of an inflammatory cardiomyopathy. This patient had a history highly suggestive of a recent viral myocarditis.

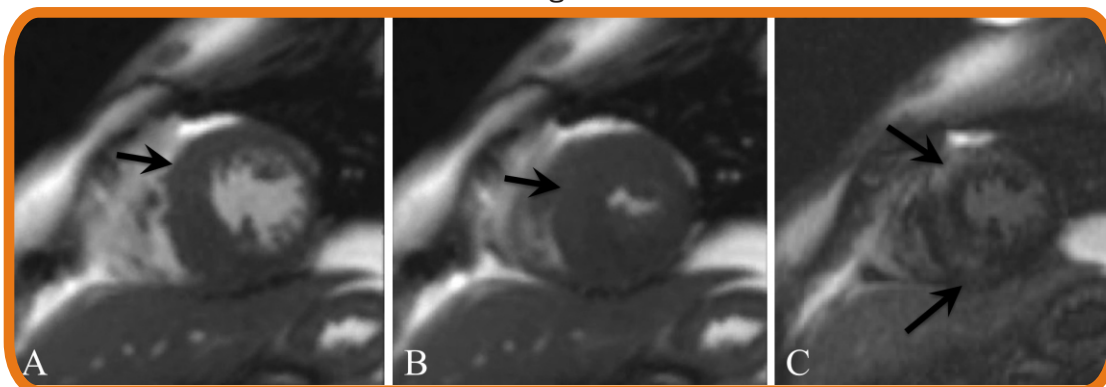


Fig. 4

Fig. 4: Hypertrophic cardiomyopathy (HCM). Diastolic (A) and systolic (B) short-axis images from a cine video file show significant asymmetric septal hypertrophy (arrows). The delayed contrast-enhanced image shows patchy but significant, mid-myocardial enhancement (arrows) suggestive of fibrosis and necrosis. This increases the incidence of sudden cardiac death.

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