

Poster presentation

The clinical impact of CMR in today's world: a two-center experience

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Background

Cardiac MRI (CMR) is an important diagnostic imaging modality. However, significant concerns exist about its additive clinical value in the face of currently accepted imaging modalities such as echocardiography, nuclear medicine, coronary CT angiography and cardiac catheterization.

Aim

We hypothesized that results of CMR would independently impact patient management in a wide variety of clinical scenarios.

Study design

Observational study

Methods

We retrospectively reviewed charts of 361 patients who underwent CMR exams (GE 1.5 T, Milwaukee, WI) over a six-month period at two centers. Center 1 was an academic-community hospital in Western Pennsylvania, also offering specialty services for pulmonary hypertension and cardiac transplantation. Center 2 was a private community hospital in Western Pennsylvania. Studies were reviewed for compliance with the Appropriateness Criteria for CMR published by the American College of Cardiology (ACC) in 2006. All components of CMR exam such as structure and function, phase velocity mapping (PVM), MR angiography (MRA), delayed hyperenhancement

(DHE) and stress perfusion (SP) were recorded. Patient outcomes were assessed to see if CMR resulted in any independent new information, or it merely confirmed another modality. "Significant contribution", as assessed by a cardiac MRI expert at each center was defined as either: 1) new treatment 2) change in current treatment 3) important information that was missed by other imaging modalities. Disparities in assessment were settled by consensus between the two experts.

Results

Of the 361 patients we reviewed, only one study was considered inappropriate by Appropriateness Criteria. Although the indications for the test varied at the two centers, 338 patients (94%) had a significant change in outcome based on CMR results. Of these, 63 (18%) patients had a major amend to their care such as diagnosis of complex congenital heart disease, prevention of open-heart surgery, correct assessment of valvular heart disease and/or life-saving revascularization/transplantation. In the remaining 6% of patients where CMR had no impact, the indications mainly included post surgical follow-up of asymptomatic patients. Of the CMR exam components, assessment of anatomy and function (SSFP/DIR) had the most impact (95%) followed by DHE(57%) and PVM (52%). Despite recent trepidation, PVM altered decision making in 77% of patients with valvular and congenital heart disease patients (N = 124), Figure 1, 2, 3.

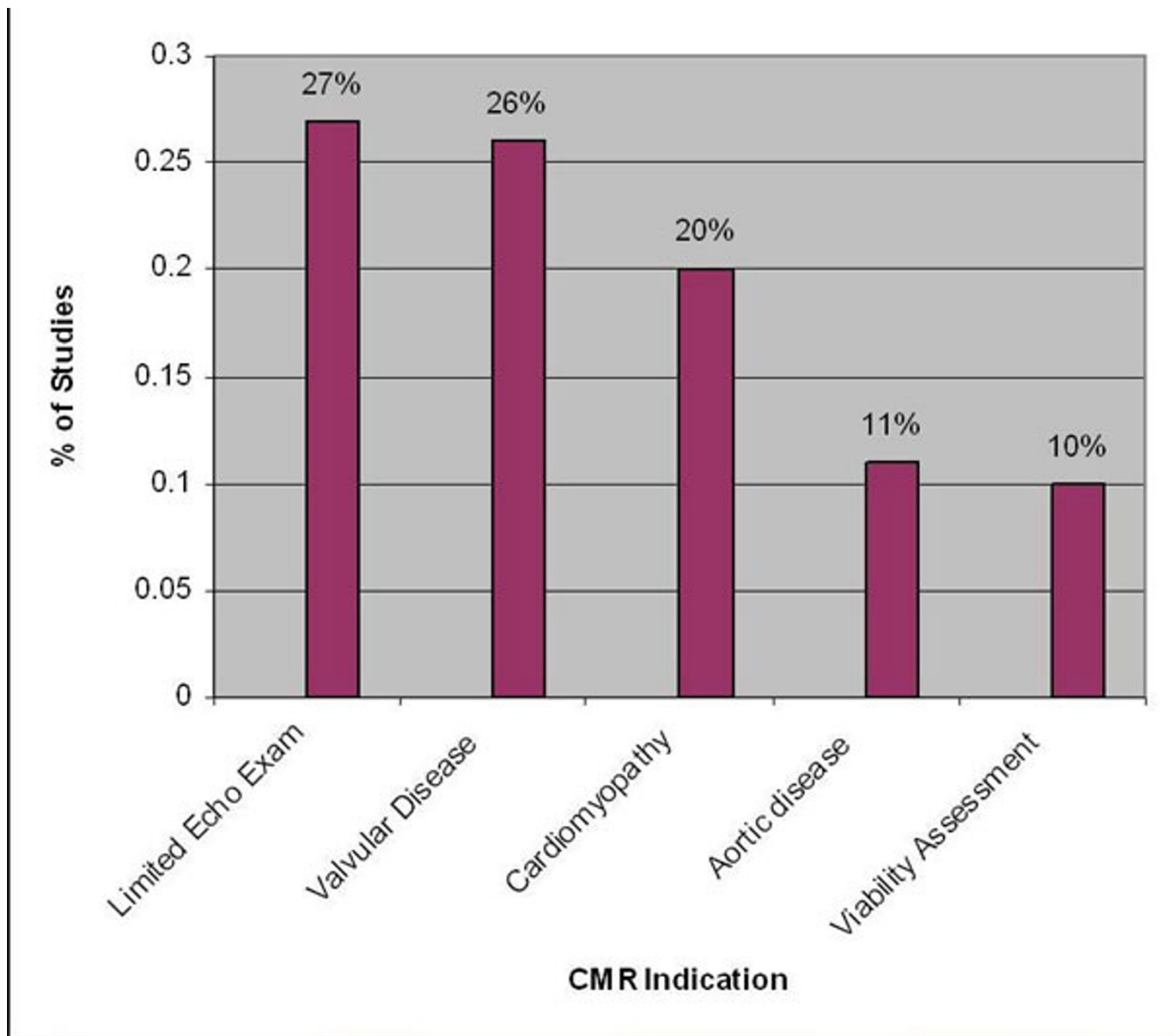


Figure 1
Indications for cardiac magnetic resonance (CMR) study.

Conclusion

CMR, when appropriately ordered, contributes significantly to patient management and many times reverses other standard diagnostic imaging conclusions, triggering a major impact on therapeutic decisions. Our study exemplifies the independent utility of CMR in cardiovascular medicine.

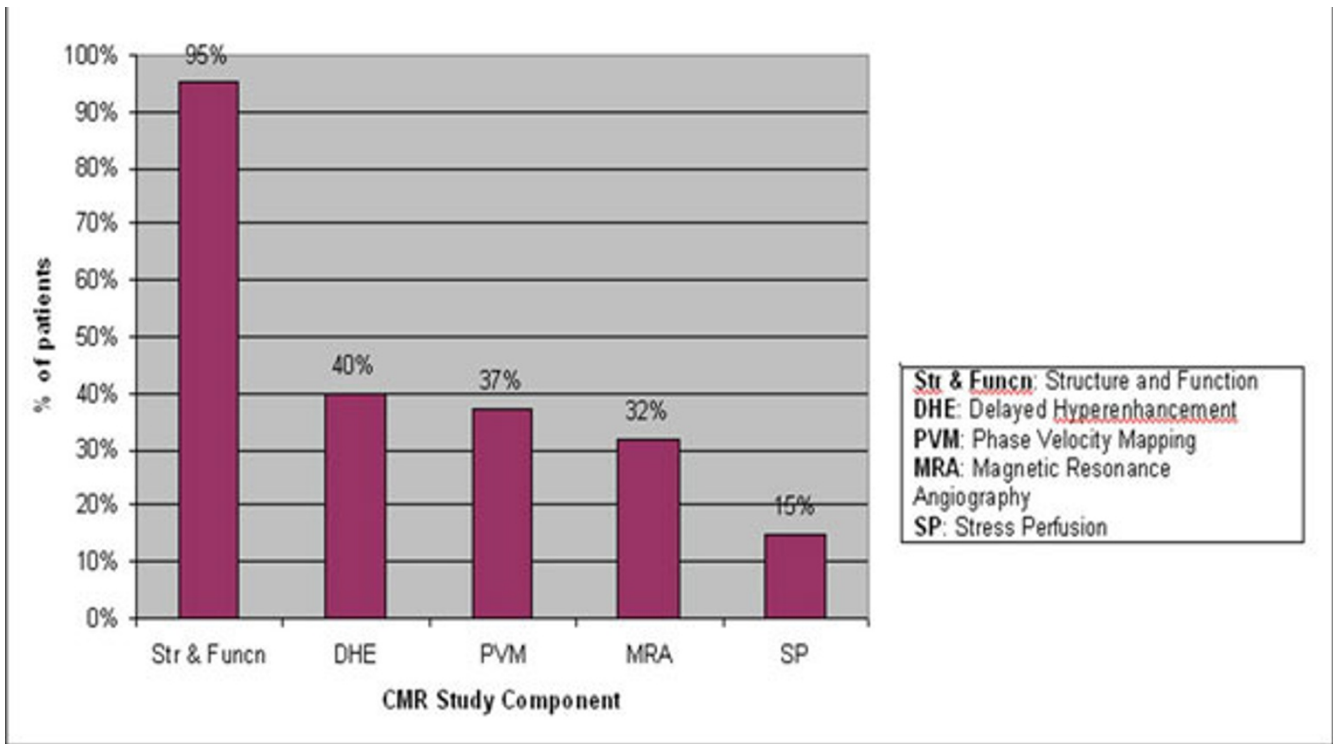


Figure 2
Impact for cardiac magnetic resonance (CMR) computation on patient outcome.

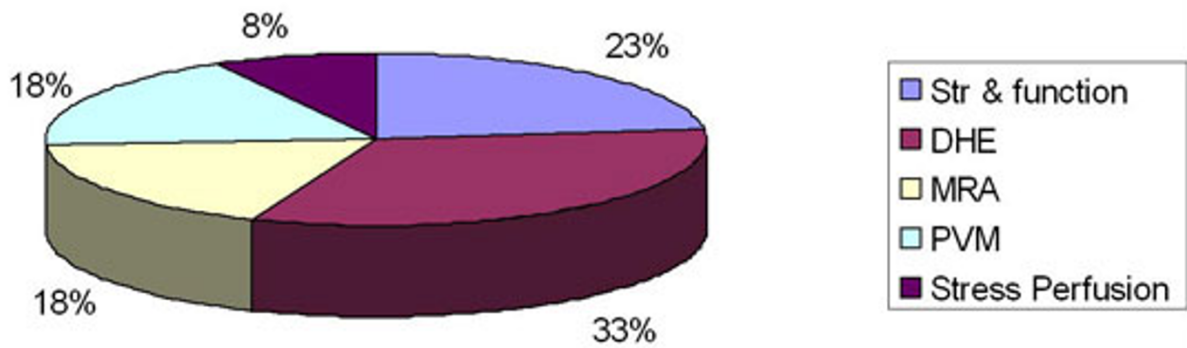


Figure 3
Contribution of CMR components in cases with Major impact (N = 63).

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