

Study examines thinning of heart muscle wall among patients with coronary artery disease

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Among patients with coronary artery disease referred for cardiovascular magnetic resonance and found to have regional myocardial wall thinning (of the heart muscle), limited scar burden was associated with improved contraction of the heart and reversal of wall thinning after revascularization, suggesting that myocardial thinning is potentially reversible, according to a study appearing in the March 6 issue of *JAMA*.

Regional myocardial wall thinning is thought to represent chronic [myocardial infarction](#). "However, recent case reports incorporating the use of delayed-enhancement [cardiovascular magnetic resonance](#) (CMR) imaging raise the possibility that this viewpoint is incorrect. These single-patient reports indicate that myocardial regions with severe wall thinning do not necessarily consist entirely of scar tissue but instead may have minimal or no scarring. Thus, some areas of myocardial thinning may represent viable myocardium and have the potential for recovery of function," according to background information in the article.

Dipan J. Shah, M.D., of Duke University Medical Center, Durham, N.C., and colleagues conducted a study to evaluate patients with regional myocardial wall thinning and to determine scar burden and potential for functional improvement. The study, conducted from August 2000 through January 2008, included 1,055 patients with known [coronary artery disease](#) (CAD) who underwent CMR imaging.

"Of 201 patients [19 percent] identified by CMR as having wall thinning, most had significant [left ventricular](#) dysfunction, multivessel

CAD, and thinning of a substantial portion of the [left ventricle](#). Among this cohort, 18 percent of thinned regions had limited or no scarring observed using delayed-enhancement CMR. Because the lack of scarring was associated with significant contractile improvement and reverse remodeling with resolution of wall thinning following [revascularization](#), we believe the data indicate that myocardial thinning is potentially reversible and therefore should not be considered a permanent state," the authors write.

"... we believe our study provides new insights into the pathophysiology of thinned myocardium and more broadly the process of reversible ischemic injury. The data show that thinned [myocardium](#) may consist of limited [scar tissue](#) and can recover function— concepts that are both inconsistent with current views.

"The findings provide rationale for future experimental studies on reversible ischemic injury as well as for clinical studies prospectively testing whether CMR guidance for coronary revascularization decisions can improve patient outcome," the researchers conclude.

In an accompanying editorial, Deepak K. Gupta, M.D., of Brigham and Women's Hospital, Boston, and colleagues write that the two cardiovascular imaging studies in this issue of *JAMA* "address the important issue of how supplemental noninvasive imaging studies can assist the cardiovascular specialist."

"Together these reports provide a consistent message that detailed assessments of tissue composition, in particular fibrosis by late gadolinium enhancement (LGE), may provide superior information than morphologic parameters, in both ischemic and nonischemic cardiomyopathies. Collectively, these and other studies demonstrate that CMR with LGE imaging adds to the practitioner's armamentarium for assessment of cardiac structure and function and augments diagnostic

and prognostic capabilities."

"However, the clinical challenge remains in deciding which patients to evaluate with CMR and LGE and what to do with the findings. Nevertheless, whether CMR with LGE imaging would provide better assessment for nonischemic or ischemic heart disease for guiding decisions regarding revascularization or implantable cardioverter defibrillator placement and the subsequent influence on prognosis remain intriguing and warrant further study. At this point, for the practicing physician, the incremental information gained from CMR with LGE imaging from these 2 studies, albeit novel and supportive, is not yet sufficient to alter clinical practice guidelines."

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