Correspondence

Letters to the Editor must not exceed 400 words in length and must be limited to three authors and five references. They should not have tables or figures and should relate solely to an article published in Circulation within the preceding 12 weeks. Authors of letters selected for publication will receive prepublication proofs, and authors of the article cited in the letter will be invited to reply. Replies must be signed by all authors listed in the original publication. Please submit three typewritten, double-spaced copies of the letter to Herbert L. Fred, MD, % the Circulation Editorial Office. Letters will not be returned.

Ventricular Remodeling Does Not Accompany the Development of Heart Failure in Diabetic Patients After Myocardial Infarction

To the Editor:

Scott D. Solomon and colleagues report that the increased incidence of heart failure (HF) after myocardial infarction (MI) in patients with diabetes cannot be explained by an increased propensity for left ventricular enlargement. Although HF develops at twice the rate in diabetic patients than in nondiabetic patients after MI, and although the development of HF is associated with increased ventricular enlargement in both groups, the incidence and extent of left ventricular (LV) enlargement are significantly less in diabetic patients. Increased risk of HF in diabetes without MI is associated with poor glycemic control, neurohormonal activation, and increased oxidative stress. Studies have identified dyssynchrony between right and left ventricular contraction and relaxation as an independent predictor of HF and cardiac mortality in patients with HF. The sequelae of ventricular dyssynchrony include loss of coordination of contraction and relaxation, leading to increases in regional and global wall stress, reductions in stroke volume and in the rate of rise of left ventricular pressure, diminished diastolic filling time, prolongation of mitral regurgitation, and diminished effective ejection time.

We evaluated whether abnormalities of echocardiographic parameters of ventricular dyssynchrony were associated with differences in glycemic control in 31 type 2 diabetic patients (16 men and 15 women) aged 59.2 ± 8.7 years (mean ± SD) 97 ± 19 days after uncomplicated first MI. Myocardial performance index, transmitral Doppler flow, and pulmonary venous flow analysis were performed to assess ventricular dyssynchrony. Compared with patients without ventricular dyssynchrony (n = 17), patients with ventricular dyssynchrony (n = 14) had increased HbA1c levels (7.2 ± 1.7% versus 9.8 ± 1.2%, P < 0.01) and fasting plasma glucose (7.7 ± 1.1 versus 8.9 ± 1.3 mmol/L, P < 0.02), whereas body mass index, duration of diabetes, and use of β-blocker therapy were similar in both groups. Moreover, echocardiographic determination of LV areas, infarct segment length, and ejection fractions showed no difference between the groups. Echocardiographic parameters for ventricular dyssynchrony might be seen as an early indicator of left ventricular dysfunction in diabetic patients after MI, particularly in those with poor glycemic control.

Raffaele Marfella, MD
Mario Verza, MD
Dario Giugliano, MD
Department of Geriatrics and Metabolic Diseases
Second University of Naples
Napoli, Italy
raffaele.marfella@unina2.it

Scott D. Solomon, MD
Hicham Skali, MD
Eugene Braunwald, MD
Marc A. Pfeffer, MD, PhD
For the Survival And Ventricular Enlargement (SAVE) Investigators
Cardiovascular Division
Department of Medicine
Brigham and Women’s Hospital
Boston, Mass

Martin St. John Sutton, MD
Ted Plappert
Cardiovascular Division
University of Pennsylvania
Philadelphia, Pa

Gervasio A. Lamas, MD
Division of Cardiology
Mt Sinai Medical Center
Miami Beach, Fla

Jean L. Rouleau, MD
Cardiovascular Division
University of Toronto Health Network
Toronto, Ontario

Lemuel Moye, PhD
School of Public Health
University of Texas
Houston, Tex


Response

Marfella et al have suggested an alternative mechanism by which diabetes may modify ventricular remodeling. In a small number of type 2 diabetics, they have shown that worsening measures of glycemic control, including glucose intolerance and HbA1c, were associated with ventricular dyssynchrony. These data raise the possibility that ventricular dyssynchrony might further distinguish diabetics from non-diabetics and might influence ventricular remodeling after myocardial infarction. Unfortunately, we have no specific data to support this hypothesis from the Survival And Ventricular Enlargement (SAVE) trial patients presented in our analysis. Specifically, we have not looked at measures of dyssynchrony, either echocardiographic or electrocardiographic, and do not have fasting plasma glucose levels or HbA1c levels for these patients. Nevertheless, the fact that diabetics developed heart failure after myocardial infarction at twice the incidence of non-diabetics while not demonstrating increased ventricular remodeling argues that inherent functional abnormalities, including possibly ventricular dyssynchrony, likely contribute to these differences. Assessment of these and other functional differences between diabetics and non-diabetics is worthy of further investigation.

Scott D. Solomon, MD
Hicham Skali, MD
Eugene Braunwald, MD
Marc A. Pfeffer, MD, PhD
For the Survival And Ventricular Enlargement (SAVE) Investigators
Cardiovascular Division
Department of Medicine
Brigham and Women’s Hospital
Boston, Mass
The online version of this article, along with updated information and services, is located on the World Wide Web at:

http://circ.ahajournals.org/content/107/13/e85

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org/subscriptions/