

Impaired Resting Myocardial Annular Velocities Are Independently Associated With Mental Stress–Induced Ischemia in Coronary Heart Disease

Mads Ersbøll, MD, PhD,* Fawaz Al Enezi, MD,* Zainab Samad, MD, MHS,* Brenda Sedberry, RCDS,* Stephen H. Boyle, PhD,† Christopher O'Connor, MD,* Wei Jiang, MD,*† Eric J. Velazquez, MD,* on behalf of the REMIT Investigators
Durham, North Carolina

JACC: CARDIOVASCULAR IMAGING CME

CME Editor: Ragavendra R. Baliga, MD

This article has been selected as this issue's CME activity, available online at <http://imaging.onlinejacc.org> by selecting the CME tab on the top navigation bar.

Accreditation and Designation Statement

The American College of Cardiology Foundation (ACCF) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

The ACCF designates this Journal-based CME activity for a maximum of 1 *AMA PRA Category 1 Credit(s)*[™]. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Method of Participation and Receipt of CME Certificate

To obtain credit for this CME activity, you must:

1. Be an ACC member or *JACC: Cardiovascular Imaging* subscriber.
2. Carefully read the CME-designated article available online and in this issue of the journal.
3. Answer the post-test questions. At least 2 out of the 3 questions provided must be answered correctly to obtain CME credit.
4. Complete a brief evaluation.
5. Claim your CME credit and receive your certificate electronically by following the instructions given at the conclusion of the activity.

CME Objective for This Article: After reading this article the reader should understand: 1) the prevalence

and clinical importance of mental stress induced ischemia as well as previously established demographic characteristics associated with its occurrence; 2) the generally accepted criteria for detection of mental stress induced ischemia; and 3) the relationship between annular myocardial velocities and the development of mental stress induced ischemia.

CME Editor Disclosure: *JACC: Cardiovascular Imaging* CME Editor Ragavendra R. Baliga, MD, has reported that he has no relationships to disclose.

Author Disclosure: Dr. Samad is a subinvestigator for the Everest II Real World Expanded Multicenter Study of the MitraClip System, funded by Abbott Vascular. Dr. O'Connor is a co-owner of Biscardia; is a stockholder in Neurotronik/Interventional Autonomics Corporation; and has received financial support from Actelion Pharmaceuticals, Amgen, Astellas Pharma, BG Medicine, Critical Diagnostics, GE Healthcare, Gilead Sciences, HeartWare, Ikaria, Johnson & Johnson, Novartis, Otsuka Pharmaceutical Company, Pfizer Inc., Pozen, ResMed, and Roche Diagnostics. Dr. Velazquez is a consultant for Novartis; and has received research grants from Abbott Vascular and Ikaria Pharmaceuticals. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Medium of Participation: Print (article only); online (article and quiz).

CME Term of Approval:

Issue Date: April 2014

Expiration Date: March 31, 2015

Impaired Resting Myocardial Annular Velocities Are Independently Associated With Mental Stress–Induced Ischemia in Coronary Heart Disease

OBJECTIVES The aim of this study was to investigate the association between resting myocardial function as assessed by tissue Doppler myocardial velocities and the propensity to develop mental stress–induced ischemia (MSIMI).

BACKGROUND Tissue Doppler myocardial velocities detect preclinical cardiac dysfunction and clinical outcomes in a range of conditions. However, little is known about the interrelationship between myocardial velocities and the propensity to develop MSIMI compared with exercise stress–induced myocardial ischemia.

METHODS Resting annular myocardial tissue Doppler velocities were obtained in 225 patients with known coronary heart disease who were subjected to both conventional exercise stress testing as well as a battery of 3 mental stress tests. Diastolic early (e') and late (a') as well as systolic (s') velocities were obtained, and the eas index, an integrated measure of myocardial velocities, was calculated as $e'/(a' \times s')$. MSIMI was defined as: 1) the development or worsening of regional wall motion abnormality; 2) a reduction in left ventricular ejection fraction $\geq 8\%$; and/or 3) ischemic ST-segment changes during 1 or more of the 3 mental stress tests.

RESULTS A total of 98 of 225 patients (43.7%) exhibited MSIMI. Patients developing MSIMI had significantly lower s' (7.0 ± 1.7 vs. 7.5 ± 1.2 , $p = 0.016$) and a' (8.9 ± 1.8 vs. 10.0 ± 1.9 , $p < 0.001$) at baseline, whereas e' did not differ (6.5 ± 1.7 vs. 6.5 ± 1.8 , $p = 0.85$). Furthermore, the eas index was significantly higher (0.11 ± 0.04 vs. 0.09 ± 0.03 , $p < 0.0001$). The eas index remained significantly associated with the propensity to develop MSIMI (odds ratio per 0.05-U increase: 1.85; 95% confidence interval: 1.21 to 2.82; $p = 0.004$) after adjustment for resting left ventricular ejection fraction, resting wall motion index score, sex, and social circumstances of living. There was no association between resting eas index and exercise stress–induced myocardial ischemia.

CONCLUSIONS MSIMI but not exercise stress–induced myocardial ischemia is independently associated with resting abnormalities in myocardial systolic and late diastolic velocities as well as the integrated measure of the eas index in patients with known coronary artery disease. (Responses of Myocardial Ischemia to Escitalopram Treatment [REMIT]; [NCT00574847](#)) (J Am Coll Cardiol Img 2014;7:351–61) © 2014 by the American College of Cardiology Foundation

Mental stress–induced myocardial ischemia (MSIMI) is prevalent in patients with coronary artery disease (CAD) (1,2) and portends adverse outcome independently of traditional risk factors in this population (3). Several studies have demonstrated distinct physiological alterations coupling mental stress to cardiovascular changes, such as dynamic reductions in coronary blood flow demonstrated

during mental stress in patients with CAD (4,5) and exaggerated catecholaminergic response during mental stress with increased systemic vascular resistance, opposite of the pattern seen during exercise (6). Recently, treatment with escitalopram has been demonstrated to reduce the rate of MSIMI in patients with CAD in the REMIT (Responses of Myocardial Ischemia to Escitalopram Treatment) trial (7).

World Expanded Multicenter Study of the MitraClip System, funded by Abbott Vascular. Dr. O'Connor is a co-owner of Biscardia; is a stockholder in Neurotronik/Interventional Autonomics Corporation; and has received financial support from Actelion Pharmaceuticals, Amgen, Astellas Pharma, BG Medicine, Critical Diagnostics, GE Healthcare, Gilead Sciences, HeartWare, Ikaria, Johnson & Johnson, Novartis, Otsuka Pharmaceutical Company, Pfizer Inc., Pozen, ResMed, and Roche Diagnostics. Dr. Velazquez is a consultant for Novartis; and has received research grants from Abbott Vascular and Ikaria Pharmaceuticals. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Manuscript received September 17, 2013; accepted October 10, 2013.

Download English Version:

<https://daneshyari.com/en/article/2937997>

Download Persian Version:

<https://daneshyari.com/article/2937997>

[Daneshyari.com](https://daneshyari.com)