Getting at the Heart of Central Obesity and the Metabolic Syndrome

Barry A. Borlaug, MD; Yogesh N.V. Reddy, MD

Nearly 2 billion adults and 42 million children are either obese or overweight worldwide. In the United States, a staggering 36% of all adults are obese. Obesity is a major risk factor for many cardiovascular diseases, including heart failure (HF). Obesity and weight gain are associated with increases in left ventricular (LV) mass, amplification of age-related LV stiffening, and worsening LV diastolic and systolic dysfunction—effects that are strikingly similar to what is seen in patients with the clinical syndrome of HF with preserved ejection fraction (HFpEF)."
As in all cross-sectional analyses, causation cannot be proven from this correlation, and the mechanisms explaining the relationship between central obesity and adverse LV mechanics remain unclear. Arterial pulsatile load is increased with central obesity but was not directly measured in the current analysis. However, it has previously been shown that increases in body weight are correlated with increased LV diastolic stiffness even after adjusting for arterial load. Central obesity is also associated with greater age-related increases in LV systolic stiffness in women, which is also typical of HFpEF, even as other indices of LV systolic function become impaired. This provides further support for the importance of central obesity and metabolic syndrome in contributing to the changes in myocardial structure and function that lead to HFpEF. Central fat is metabolically more active than peripheral fat, and the current data suggest that myocardial dysfunction noted in patients with central obesity (with or without HF) can be considered to be a form of metabolic heart disease that may require its own specific treatments.

What then are the next steps? The data from Selvaraj et al. in concert with previous studies raises the possibility that treating central obesity might prevent or treat early stages of LV dysfunction that lead to HFpEF. Clinical trials testing this approach are urgently needed. Perhaps, targeting the downstream metabolic and inflammatory sequelae of central fat may be effective. Alternatively, weight loss and of itself would have beneficial reductions in both central and peripheral fat depots. Kitzman et al. recently showed in an elegant trial that weight loss through caloric restriction reduces LV mass and inflammatory markers, enhances diastolic LV filling, and improves exercise capacity and quality of life in patients with HFpEF. Importantly, these salubrious effects from diet were coupled with highly significant reductions in abdominal and visceral fat. Future study is indicated to determine whether this result can be replicated using other methods to achieve weight loss, and in other patient populations. We might hope that this result can be replicated using other methods to achieve weight loss, and in other patient populations.

References


Key Words: Editorials ♦ blood pressure ♦ body mass index ♦ diabetes mellitus ♦ hypertension
Getting at the Heart of Central Obesity and the Metabolic Syndrome
Barry A. Borlaug and Yogesh N.V. Reddy

_Circ Cardiovasc Imaging_. 2016;9:
doi: 10.1161/CIRCIMAGING.116.005110
_Circulation: Cardiovascular Imaging_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2016 American Heart Association, Inc. All rights reserved.
Print ISSN: 1941-9651. Online ISSN: 1942-0080

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circimaging.ahajournals.org/content/9/6/e005110

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in _Circulation: Cardiovascular Imaging_ 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: Cardiovascular Imaging_ is online at:
http://circimaging.ahajournals.org//subscriptions/