Body mass index, type 2 diabetes, and left ventricular function

Katrine Dina Musaeus and Manan Pareek

Abstract

A recent study found that among individuals with a preserved left ventricular ejection fraction \( \geq 55\% \), global longitudinal strain was significantly lower in overweight patients (i.e., body mass index \( \geq 25 \text{ kg/m}^2 \)) with, but not in those without, type 2 diabetes mellitus. These results contrast previous observations of body mass index as a significant predictor of incident diastolic dysfunction and increased left ventricular mass index among subjects without prevalent diabetes. We discuss potential explanations for the observed discrepancies and general difficulties associated with cardiovascular risk assessment based on body mass index and related metabolic factors.

Keywords: Body mass index, Diabetes mellitus, type 2, Ventricular dysfunction, left, Ventricular function, left
Table 2 in the original paper [1]. Accordingly, we encourage the authors to provide the results of an appropriate interaction analysis to better clarify this issue.

Finally, in the previous study, BMI was independently associated with incident echocardiographic abnormalities at the expense of insulin sensitivity [2]. The frequent co-occurrence of insulin resistance, hyperinsulinemia, obesity, hypertension, and T2DM makes it difficult to dissect the separate role of each of these conditions for the development of subclinical cardiac damage, and studies of insulin and cardiac structure and function have revealed inconsistent findings [8–10]. Therefore, we believe the authors have a golden opportunity to examine associations between insulin and the most sensitive marker of impaired LV function, GLS.

Abbreviations
BMI: body mass index; EF: ejection fraction; GLS: global longitudinal strain; LV: left ventricle/left ventricular; LVEF: left ventricular ejection fraction; T2DM: type 2 diabetes mellitus.

Authors’ contributions
Both authors (KM and MP) drafted the manuscript. Both authors read and approved the final manuscript.

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Dr. Manan Pareek, MD, Ph.D., FESC is a cardiologist in training and has worked with cardiovascular epidemiology for more than 4 years. His Ph.D. thesis, entitled “The Interplay between Fasting Glucose, Echocardiography, and Biomarkers: Pathophysiologic Considerations and Prognostic Implications” includes a large section on cardiac structural and functional implications of glycemic disturbances.

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Competing interests
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