Abstract: P924

Benefits of bariatric surgery on subclinical myocardial function using global longitudinal strain in severely obese individuals with and without diabetes

Authors:
M Piche1, MA Clavel1, P Pibarot1, P Poirier1, 1Quebec Heart and Lung Institute - Quebec - Canada,

Topic(s):
Tissue Doppler, Speckle Tracking and Strain Imaging

Citation:

Background/Introduction: The presence of subclinical myocardial disease confers an increased cardiovascular disease risk. The effects of bariatric surgery on subclinical myocardial function assessed using left ventricular (LV) global longitudinal strain (GLS) in severely obese individuals with preserved LV ejection fraction is unclear.

Purpose: To evaluate changes in subclinical LV myocardial function following bariatric surgery in obese individuals with and without diabetes.

Methods: Thirty-eight severely obese individuals [body mass index (BMI) >35kg/m2] with preserved LV ejection fraction (= 50%) who underwent bariatric surgery (Surgery group) (BMI 48 ± 7 kg/m2), 19 obese individuals managed conservatively (Cons. group) (BMI 47 ± 9 kg/m2), and 18 age and sex-matched non-obese controls (Non-obese group) were included. Echocardiography with GLS measurements was performed at the beginning of the study and at 6 months. Abnormal myocardial function was defined as a GLS >-17%.

Results: Mean age of obese patients was 42 ± 11, BMI 48 ± 8 kg/m2, and 82% were female. The percentage of total weight loss at 6 months after bariatric surgery (Surgery group) was 26.3 ± 5.2%. Body weight remains unchanged at 6 months in the Cons. group. Proportions of hypertension (61 vs. 30%, P=0.0005), dyslipidemia (42 vs. 5%, P=0.0001) and type 2 diabetes (40 vs. 13%, P=0.002) were reduced in the Surgery group. At the beginning, severely obese patients (Surgery group) displayed subclinical myocardial dysfunction vs. non-obese controls (LV GLS, -17.3 ± 2.5 vs. -19.6 ± 1.7%, P=0.003). Six months after bariatric surgery, the subclinical myocardial function was comparable between both groups (LV GLS, -19.2 ± 2.1 vs. -19.6 ± 1.7%, P=NS). 22 severely obese individuals (58%) in the Surgery group showed abnormal GLS, which normalized in 82% after bariatric surgery (P=0.0001). On the contrary, half of severely obese individuals managed conservatively (n=10, 53%) worsened their GLS during the follow-up (P=0.002). Remission of type 2 diabetes 6 months after bariatric surgery was associated with improvement in GLS (-17.5 ± 2.6 vs. -18.6± 1.8%), whereas obese individuals with type 2 diabetes managed conservatively showed a worsening in their subclinical myocardial function during the follow-up (-18.0 ± 2.4 vs. -17.4 ± 1.7%).

Conclusions: A great proportion of severely obese individuals with preserved LV ejection fraction have subclinical myocardial dysfunction. Bariatric surgery in obese individuals was associated with significant improvements in the metabolic profile and in subclinical myocardial function.