Evaluation of right ventricular deformations after coronary artery bypass graft surgery

Maryam Faghani[1], Khansari N[1], Homayounfar Sh[1], Seyed Kianoosh Hosseini[1], Manafi B[1], Mohammad Ali Seif Rabiee[1], Fahimeh Ghasemi[1], and Heidari A[2]

[1]Hamadan University of Medical Sciences
[2]The University of Buckingham Medical School

March 20, 2022

Abstract

Introduction: Coronary artery bypass graft (CABG) surgery is a common therapeutic intervention performed in patients with coronary artery disease. However, this operation has several postoperative complications; One of the most common complications after CABG surgery is right ventricular dysfunction. Therefore, the aim of this study is to evaluate RV deformations indices after CABG surgery. Methods: This cross-sectional study was performed from 2019 to 2020 in the cardiac surgery ward of Farshchian Hospital in Hamadan. 40 patients with cardiac ischemia were studied as single vessel disease (SVD), two vessels disease (2VD) and three vessels disease (3VD) who were candidates for CABG surgery. All patients underwent color and tissue Doppler echocardiography and Strain RV imaging, before and one month after CABG. Data analysis was performed using SPSS version 21 and a p-value less than 0.05 was considered statistically significant. Results: Among 40 patients (32 males and 8 female), the average age was 65.17 (SD 7.87) and average body mass index was 25.59 (SD 3.20). 4 patients underwent off-pump CABG surgery. Mean LVEF, SPAP, and RV diameter one month after CABG significantly increased compared with pre-surgery and TDI (SM), Strain RV (GLS), FAC, MPI RV, and TAPSE were decreased, which was less in the group B (3VD) than the first group (P <0.001). There was no significant difference between RVDD and LVDD before and one month after CABG (P> 0.05). No significant correlation coefficient was observed between Strain RV changes and pump time. Conclusion: Changing the right ventricular geometry after CABG, leads to reduction of Longitudinal deformation while maintaining overall RV function. Therefore, it is recommended to consider lower normal values for these indices after CABG to be taken.

Hosted file

`article.docx` available at https://authorea.com/users/457782/articles/560568-evaluation-of-right-ventricular-deformations-after-coronary-artery-bypass-graft-surgery