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Short Communication

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In Post-Cardiac Transplant Patients, Weight Loss with a Plant-Based Diet Compares Favorably to Weight Loss with Usual Care and is Safe: A Pilot Study

Robert J Ostfeld[1]*, Daniele Massera[1], Jonathan C Lin[2], Evan Y. Choi[3], Lauren Graf[4], Adriana Phan[5] and David D'Alessandro[6]

Abstract

Objective: Weight gain after cardiac transplantation is common. A whole-food plant-based (WFPB) diet may result in weight loss in post-cardiac transplant patients.

Methods: Four patients at least six months post-cardiac transplantation were encouraged to adopt a WFPB diet. Twenty-nine consecutive post-cardiac transplant patients undergoing standard care were the comparator group. The primary endpoint was the percentage of patients who lost ten or more pounds in each group.

Results: Three of the 4 (75%) patients who at least partially adopted (>50%) the WFPB diet lost ten or more pounds compared with 7 of 29 (24%) usual care patients (p=0.07). Among patients losing any weight, the median percent weight loss was 9.0% for the WFPB group (n=3) vs. 5.3% for the usual care group (n=13), (p=0.16). No complications due to diet occurred.

Conclusion and Implications: A WFPB diet was safe and may facilitate weight loss for patients at least six months post cardiac-transplantation. Further study is suggested.

Keywords

Whole food plant based diet; Weight loss; Cardiac transplant; Vegetarian; Vegan

Introduction

Weight gain after cardiac transplantation is common [1,2] and is associated with increased adverse events such as hyperlipidemia [3,4], organ rejection, and death [5]. A whole-food plant-based (WFPB) diet, which includes all vegetables, fruits, whole grains, beans, lentils, potatoes and nuts and avoids all animal products, including dairy and eggs, has been associated with weight reduction [6].

***Corresponding author:** Robert J Ostfeld, Cardiac Wellness Program, Montefiore Medical Center, Associate Professor of Clinical Medicine, Albert Einstein College of Medicine, 3400 Bainbridge Ave, MAP 7-Heart Center, Bronx, NY 10467, USA, Tel: (718) 920-5197; Fax: (718) 231 6257; E-mail: rostfeld@montefiore.org

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Methods

We instituted a pilot program at Montefiore Medical Center where instead of usual post-transplant nutritional care, four patients (WFPB group) at least six months post cardiac transplantation were encouraged to adopt a WFPB diet. The WFPB diet was supplemented with vitamin B12 and grapefruit was avoided given concurrent statin use. The WFPB group otherwise received standard post-transplant care. Twenty-nine temporally similar and consecutive post cardiac transplant patients undergoing standard post-transplant care were the comparator group (usual care). The primary outcome was the percentage of patients in each group who lost ten or more pounds.

Pre-transplant, all patients received a comprehensive nutritional assessment and those with low Body Mass Index (BMI) (<19.9 kg/m^2) or elevated BMI (>24.9 kg/m^2), uncontrolled diabetes, or other high risk nutritional states met monthly with a transplant dietitian. Post-transplant, patients in the WFPB group were referred to our Cardiac Wellness Program. Each patient had an individual visit with a preventive cardiologist (RJO) and attended a one-time, four-hour nutritional counseling session. For the usual care group, at risk patients, as defined above, received monthly visits with a transplant dietitian and participated in a monthly weight management support group.

The baseline weight was the six month post cardiac transplant visit weight. This time point was chosen to both reduce confounding from steroid use and to permit time for recovery from potential pre-transplant cachexia. The baseline weight was compared with the most recent follow-up weight, which was measured in clinic or ascertained by phone. Recommendations for physical activity did not differ between groups. This study was approved by the Montefiore Medical Center institutional review board. Fisher's exact test was used for comparison of proportions and the Mann-Whitney U test was used for comparison of medians. A two-sided alpha of 0.05 was pre-specified. STATA 14.1 (StataCorp LP, College Station, TX, USA) was used for all statistical analyses.

Results

All four patients in the WFPB group self-reported that they adopted the WFPB diet for at least 50% of their diet. Three of those four (75%) patients lost ten or more pounds compared with 7/29 (24%) usual care patients (p=0.07). The three patients on the WFPB diet who lost weight adopted the WFPB diet at least 80% of the time, and the patient who did not lose weight adopted the WFPB diet less than 80% of the time. All four WFPB group patients had a baseline BMI>30 (Table 1).

In the usual care group, excluding patients with baseline BMI <25 kg/m^2, 6/19 (31.6%) patients lost 10 or more pounds (on average 5.9% of body weight); excluding patients with baseline BMI <30 kg/m^2, 5/11 (45.5%) patients lost 10 or more pounds, (on average 4.3% of body weight).

Among patients who lost any amount of weight, 3 in WFPB group and 13 in usual care group, the median percent weight loss and interquartile ranges were: 9.0% (5.9-9.7) for the WFPB group vs. 5.3% (3.1-7.6) for the usual care group, (p=0.16). No complications related to diet were observed in the WFPB group.

Table 1: Clinical characteristics in whole-food plant-based diet and usual care groups.

	Whole-food plant-based diet (n=4)	Usual Care (n=29)
Age, years (median – IQR)	62 (57.5-67.3)	62 (52-68)
Body mass index at enrolment, kg/m^2 (median – IQR)	34.6 (30.8-44.1)	28.2 (24.1-30.5)
Male gender, n (%)	4 (100)	19 (65.5)
Transplant date range	6/2008 – 5/2014	1/2013 – 11/2014
Months followed (median – IQR)	9.5 (8.3-10.8)	7 (2.5-15.5)
Abbreviation: IQR – interquartile range		

Discussion

In this pilot study, a whole-food plant-based diet was safe and even modest adherence compared favorably with usual care in regards to weight loss post cardiac transplantation. To our knowledge, this is the first report of a WFPB diet in post cardiac transplant patients.

Potential mechanisms leading to weight loss with a plant based diet include its high fiber content promoting satiety and its reduced fat content. Limitations of our single center study include the small sample size and lack of randomization. Our weight measurements may have been obtained on different pre and post intervention scales and with differing amounts of clothing. The follow-up self-reported weights obtained by phone may have led to reporting bias. However, self-reported weights have been shown to be accurate, particularly in overweight/obese populations and in post-surgical weight reporting [7-9].

We noted that the baseline BMI was higher in the WFPB diet group compared to the usual care group. The possibility of referral bias by directing patients with higher BMIs to the WFPB diet may have affected the outcome, though this group may have been enriched with patients less willing to embrace lifestyle change or with those more eager given their obesity. However, when excluding usual care patients with BMIs less than either 25 or 30, weight loss with a WFPB diet compared favorably.

This pilot study suggests that a whole-food plant-based diet is safe and may be associated with weight loss in patients at least six months post cardiac-transplantation. As weight gain post cardiac transplantation is common and associated with adverse outcomes, this approach may translate into improved patient outcomes. Additional study is recommended.

References

1. Grady KL, Costanzo-Nordin MR, Herold LS, Sriniavasan S, Pifarre R (1991) Obesity and hyperlipidemia after heart transplantation. J Heart Lung Transplant 10: 449-454.
2. Grady KL, Naftel D, Pamboukian SV, Frazier OH, Hauptman P, et al. (2005) Post-operative obesity and cachexia are risk factors for morbidity and mortality after heart transplant: multi-institutional study of post-operative weight change. J Heart Lung Transplant 24: 1424-1430.
3. Taylor DO, Thompson JA, Hastillo A, Barnhart G, Rider S, et al. (1989) Hyperlipidemia after clinical heart transplantation. J Heart Transplant 8: 209-213.
4. Rudas L, Pflugfelder PW, McKenzie FN, Menkis AH, Novick RJ, et al. (1990) Serial evaluation of lipid profiles and risk factors for development of hyperlipidemia after cardiac transplantation. Am. J. Cardiol 66: 1135-1138.
5. Grady KL, White-Williams C, Naftel D, Costanzo MR, Pitts D, et al. (1999) Are preoperative obesity and cachexia risk factors for post heart transplant morbidity and mortality: a multi-institutional study of preoperative weight-height indices. Cardiac Transplant Research Database (CTRD) Group. J Heart Lung Transplant 18: 750-763.
6. Agarwal U, Mishra S, Xu J, Levin S, Gonzales J, et al. (2014) A multicenter randomized controlled trial of a nutrition intervention program in a multiethnic adult population in the corporate setting reduces depression and anxiety and improves quality of life: the GEICO study. Am J Health 29: 245-254.
7. Stunkard AJ, Albaum JM (1981) The accuracy of self-reported weights. Am J Clin Nutr 34: 1593-1599.
8. Bowring AL, Peeters A, Freak-Poli R, Lim MS, Gouillou M, et al. (2012) Measuring the accuracy of self-reported height and weight in a community-based sample of young people. BMC Med Res Methodol 12: 175.
9. Christian NJ, King WC, Yanovski SZ, Courcoulas AP, Belle SH (2013) Validity of self-reported weights following bariatric surgery. JAMA 310: 2454-2456.

Author Affiliations

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[1]*Department of Medicine, Division of Cardiology, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY 10467, USA*

[2]*Albert Einstein College of Medicine, Bronx, NY 10461, USA*

[3]*Department of Medicine, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY 10467, USA*

[4]*Department of Clinical Nutrition, Montefiore Medical Center, Albert Einstein College of Medicine, 111 E. 210th Street, Bronx, NY 10467, USA*

[5]*Department of Psychiatry and Behavioral Sciences, Montefiore Medical Center, Albert Einstein College of Medicine, 111 E. 210th Street, Bronx, NY 10467, USA*

[6]*Department of Surgery, Massachusetts General Hospital, 55 Fruit Street, Cox 644 Boston, MA 02114, USA*