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WEIGHT LOSS DIETS SIGNIFICANTLY REVERSE CLOGGING OF THE ARTERIES IN STUDY LED BY BEN-GURION UNIVERSITY OF THE NEGEV RESEARCHERS

Two-year Study Reveals that Carotid Artery Atherosclerosis Reduction Is Due to Weight Loss-induced Decline in Blood Pressure from Either Low-carbohydrate, Low-fat or Mediterranean Diets

BEER-SHEVA, ISRAEL, MARCH 1, 2010 – A two-year study led by researchers at Ben-Gurion University of the Negev (BGU) found that healthy, long-term weight loss diets can significantly reverse carotid (main brain artery) atherosclerosis, a direct risk factor for strokes and heart attacks. The study is one of the first to prove the potential of moderate weight loss as a strategy to reverse atherosclerosis (hardening of the arteries) in overweight and mildly obese people.

According to the just published study in *Circulation*, the leading journal of the American Heart Association, the researchers used novel technique imaging of three-dimensional ultrasound at the beginning and after two years, measuring changes in carotid artery vessel thickening of plaque to determine whether diet can reverse atherosclerosis, a process that naturally increases with age.

The research team compared three diets among moderately overweight, mostly male, participants. The findings, using ultrasound, showed that after two years, there was a five percent decrease in average carotid vessel-wall volume and a one percent decrease in carotid artery thickness.

Compared to participants who experienced an increased carotid wall volume, those with decreases showed significantly greater weight loss (11.7 pounds vs. 7 pounds); decreased systolic blood pressure (6.8 mmHg vs. 1.1 mmHg) and an increase in apolipoprotein A1 (Apo A1), a marker of “good cholesterol” (HDL). These participants also had reduced homocysteine levels, an amino acid in the blood that is related to higher risk of stroke or heart attack.

This study was conducted in Israel by researchers led by Dr. Iris Shai, Ben-Gurion University of the Negev, with the Nuclear Research Center in Dimona and Soroka University Medical Center in Beer-Sheva.

According to Dr. Shai, "Even if we experience some partial weight re-gain over time, long-term adherence to weight loss diets are effective for reversing carotid atherosclerosis as long as we stick to one of the current options of healthy diet strategy. This effect is more pronounced among mildly obese persons who lose more than 5.5 kgs. [12.1 lbs.] of body weight and whose systolic blood pressure decreases by more than 7 mmHg." Dr. Iris Shai is a researcher at the S. Daniel Abraham International Center for Health and Nutrition in the Department of Epidemiology at Ben-Gurion University of the Negev.

Dr. Yaakov Henkin, a cardiologist at Soroka University Medical Center, who led the carotid measurements, explains that “the importance of these results is in the understanding that over two years, changes in carotid atherosclerosis are more strongly predicted by diet-induced changes in blood pressure than by changes in lipoprotein levels, which are commonly believed more important for the coronary arteries.”

Researchers studied 140 people (88 percent men, average age 51, Body Mass Index 30.4) who were randomly assigned to a low-carbohydrate, low fat or Mediterranean diet as part of the Dietary Intervention Randomized Controlled Trial-carotid (DIRECT) study.

The study conducted at the Nuclear Research Center required significant cooperation between staff, participants and their spouses. Workplace cafeteria managers worked with clinicians and nutritional advisers to transform the food service program and provide healthy food according to each of the low fat, low carb and Mediterranean diet regimens. Along with workplace nutritional counseling, trial participant spouses were educated on keeping to the diet strategy at home.

"Lifestyle projects in the workplace might be a perfect platform for long-term successful interventions. As low-fat, low-carbohydrate and Mediterranean diets all induced regression of carotid atherosclerosis, a low-carbohydrate diet seems like a safe and efficient alternative to low-fat and Mediterranean diets in reversing the atherosclerosis process," according to Dr. Dan Schwarzfuchs, the director of the medical clinic of the Nuclear Research Center where the intervention was conducted.

This study is part of the Dietary Intervention Randomized Control Trial (DIRECT), the initial results of which were previously published in the *New England Journal of Medicine* (July 2008). In this influential paper, it was found that Mediterranean and low-carbohydrate diets may be effective alternatives to low-fat diets for inducing weight loss, with more favorable effects on lipids obtained with the low-carbohydrate diet, and on glycemic control with the Mediterranean diet. Adherence to the study was 95 percent after the first year and 85 percent after the second, an unprecedented result in dietary intervention trials.

In the current study, the researchers sought to assess whether these diets had measurable effects on established (IMT) and emerging (3-Dimensional Vessel Wall Volume) ultrasound measurements of carotid atherosclerosis and whether such effects could be predicted by alterations in lipoproteins and other less-routinely measured cardiovascular biomarkers, which they did.

The study was planned with Dr. Meir Stampfer, from Brigham and Women's Hospital and Harvard University, USA. Analysis of the IMT and 3D VWV was performed at the Imaging Research Laboratories at Robarts Research Institute, London, Canada, led by Drs. J. David Spence and Grace Parraga. Blood biomarkers were analyzed in Leipzig University Laboratories, Germany, led by Drs. Joachim Thiery and Michael Stumvoll.

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