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**The Nutritional Reversal of Cardiovascular Disease – Fact or Fiction?
Three Case Reports**

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ABSTRACT

The epidemic of cardiovascular disease is nonexistent in cultures which thrive predominantly on whole foods, plant-based nutrition. Is it logical to assume that patients with this disease would be willing to transition to plant-based nutrition and might this transition halt or reverse the disease? The authors have experience beyond 25 years demonstrating the success of plant-based nutrition in arresting and reversing cardiovascular disease. Nevertheless, the medical community is still skeptical of patients' adherence and efficacy of this method. We, therefore, report three case histories of carotid, coronary, and peripheral vascular disease. Each case demonstrates disease progression and the failure of the standard cardiovascular approaches in contrast to the prompt, powerful and enduring resolution of disease with whole foods, plant-based nutrition. These outcomes constitute an additional mandate that patients with cardiovascular disease be offered a plant-based option which is safe, inexpensive, empowering, and has the potential to end cardiovascular disease epidemic.

Keywords: cardiovascular disease, reversal, plant-based diet

INTRODUCTION

Cultures which by heritage and tradition consume predominantly plant-based nutrition are virtually free of cardiovascular illness (1-3). The question arises – Can plant based nutrition halt and reverse coronary artery disease, still the number one killer of woman and men in Western societies (4)? While the epidemiological and war time deprivation data (5), along with a small number of controlled and uncontrolled intervention studies utilizing plant-based nutrition (6-8) are compelling for using this approach to treat vascular disease, the medical community remains skeptical. This report contains three case reports of vascular disease reversal of the carotid, coronary, and peripheral vascular arteries utilizing whole foods, plant-based nutritional therapy.

Coronary artery disease experts are in agreement that the inception of this disease occurs with injury to the endothelial lining of arteries (9). It is the Western diet of oils, meat, fish, fowl, dairy products, sugar and caffeine which initiates endothelial injury and depletes mechanisms that protect endothelium.

First, such a diet diminishes production of nitric oxide, a gas which is the guardian and lifejacket of our blood vessels, starting a spiraling cascade of injury and disease of the arterial wall (10), while diets rich in fruits and vegetables have the opposite, beneficial effects (11). The enzyme dimethyl arginine dimethyl amino hydrolase (DDAH) is essential to enhance nitric oxide production. This enzyme function is reduced by hypercholesterolemia, hyperhomocysteinemia, hypertriglyceridemia, insulin resistance, diabetes, and smoking, all of which (with exception of smoking) are often the consequence of eating a Western diet and may be improved by eating the plant-based diet (12).

Second, animal foods seem to injure blood vessels also via interaction with gut microbiota. Omnivores possess intestinal bacteria which metabolize lecithin and carnitine from these foods into trimethylamine N-oxide (TMAO) that promotes vascular injury (13-15). Increased plasma levels of TMAO were associated with 2.5-fold increased risk of a major adverse cardiovascular event even after adjustment for traditional risk factors (13). However, those who strictly consumed plant foods were not able to manufacture TMAO even when challenged with the main dietary sources (steak and/or labeled carnitine), because they did not possess intestinal bacteria capable of producing TMAO (14).

Third, plant-based diets reduce total and LDL cholesterol, but also the HDL-cholesterol for which they have been criticized. HDL cholesterol has the reputation of helping to maintain vascular health yet recent studies cast doubt on the higher is better concept. First, the blood level of HDL cholesterol has no relationship with its capacity to perform reverse cholesterol transport (16). Second, eating the typical Western diet may oxidatively injure apolipoprotein-A1 (apo-A1) which is the major protein of the HDL molecule. Oxidized apo-A1 renders HDL incapable of anti-inflammatory functions converting it to a pro-inflammatory agent joining with LDL to promote injury (17). People eating plant-based diets, such as vegans, ingest more plant-based antioxidants than omnivores (18) and that higher intake may reduce apo-A1 oxidation, as has been shown for reduced lipid peroxidation (19).

The fourth beneficial effect of plant-based nutrition on cardiovascular disease (CVD) is related to its beneficial effect on the endothelial progenitor cells. These cells arise from bone marrow and replace senescent, injured endothelial cells. When measured in someone who is obese, hypercholesterolemic, diabetic, hypertensive, smoking and a non-exerciser they are low (20). An Okinawan study confirmed that ingesting extra green leafy vegetables multiple times daily enhanced endothelial progenitor cell levels, compared with women in the control arm who ate their usual, vegetable rich, diet (21).

The common denominator of all of these mechanisms that influence vascular health, with the exception of smoking, is that they can be optimized with whole foods, plant-based nutrition. We demonstrate this by the following three case reports.

Case No. 1 – R. M. of New Foundland, Canada is a 74 year old male who had a heart attack at age 42 in 1982 and a mild stroke in 1985. Imaging at that time confirmed a 100% occlusion of the right carotid artery and a 27% blockage of the left carotid artery as well as further coronary artery disease progression necessitating bypass surgery which was performed notwithstanding a 100% occluded right carotid artery. Despite optimal medical therapy and modest nutritional changes of decreasing sugar, fat, and eating less meat, the patient's left carotid artery blockage had progressed by 2008 to 80-90% occlusion by ultra sound. By 2011 he was having daily angina and his physician indicated there was nothing further they could do for him. He felt his time was short. During this time, his daughter had found and read Dr. Esselstyn's book Prevent and Reverse Heart Disease. She herself had experienced a heart attack at age 37, so they both became fully committed to whole foods, plant-based nutrition. Within one month, his angina completely disappeared and his erectile dysfunction resolved. After 4 months, he had lost 41 pounds to a body weight of 136 pounds which was the same weight at his wedding 53 years earlier. In September of 2013, a repeat duplex ultrasound confirmed left carotid artery disease reversal from 80-90% in 2008 to 50-69%. He states he no longer tires and in retirement he is physically active all day. He states "I am so busy living now, I no longer think about dying".

Case No. 2 – A.S., a 32 years old engineer, was diagnosed with Type II diabetes mellitus and began treatment with oral medication (metformin 1,000 mg twice per day with a hemoglobin A1c of 6.5). By age 43 he started experiencing chest pain. Angiography at a local hospital confirmed coronary artery disease and he required a percutaneous coronary intervention (PCI) with stent placement in May of 2003. He returned to the local hospital in August of 2005 with recurrent chest pain and he received another stent. In June of 2007, recurrent symptoms warranted two additional stents. In September of 2007, he was seen at the Cleveland Clinic with recurrent chest pain. He required two angioplasties to treat stent re-stenosis. These recurrences were despite the standard lifestyle modifications, cardiac rehabilitation and usual cardiac medications (including the addition of glimepiride), achieving an LDL cholesterol of 60 mg/dl. By July of 2008, at age 47, he was having unstable angina necessitating a double coronary artery bypass graft surgery at the Cleveland Clinic. In November of 2009 he had recurrent chest pain for which he had stenting of his stenotic bypass graft and approximately one month later in December of 2009, at the same institution, his symptoms required two more stents for stent restenosis. At this time, physicians informed him and his wife that there was little else that could be done for him in view of his aggressive and progressive disease. He therefore, started on a regimen of multiple dietary supplements as recommended by a holistic medicine practitioner. Nevertheless, on June 12, 2010 his three month experiment with holistic medicine failed and he underwent two more angioplasties for unstable angina. On June 18, 2010, becoming interested more in nutrition, he attended our 5.5 hour intensive counseling seminar at the Cleveland Clinic Wellness Institute. He has since been fully adherent to whole foods, plant-based nutrition beyond four years. He has had no further chest pain. Four months following initiating whole foods, plant-based nutrition he was declared no longer diabetic (with a hemoglobin A1c of 5.1 he was no longer taking any diabetic medications) and erectile dysfunction resolved. He maintains a normal, full work schedule and is empowered with the realization that his nutrition has vanquished his illness.

Case No. 3 – J. M. is a 62 years old male who was initially seen at the Cleveland Clinic on September 4 of 2003 at age 52. At that time he weighed 192 pounds and had hyperlipidemia and hypertension, both controlled by medications. He was given the standard diet prescription, and was started on niacin. On a return visit he had lost 25 pounds. He returned to an affiliate hospital of the Cleveland Clinic on March 15, 2006 having had a cerebral vascular accident for which he underwent a right carotid endarterectomy on March 19, 2006. At the time of that procedure he sustained a right retinal infarct. A right carotid duplex on May of 2006, two months after the procedure, confirmed the right carotid artery was now occluded. On August 27, 2007 a repeat duplex of the remaining patent left carotid artery confirmed increasing stenosis. Also, this time he was diagnosed with leg claudication. Further evaluation on February 28, 2008 confirmed progression of carotid stenosis from 20-39% in 2006 to 60-79% in 2008.

By March 14, 2010 his claudication progressed to the point of necessitating an intervention. He required an endarterectomy of his left carotid artery on June 4, 2010 before his left leg bypass surgery. The left leg operation consisted of a vein graft from the left superficial femoral to the left posterior tibial artery and was performed on September 20, 2010. Within 48 hours the graft failed. Thrombectomy of the failed graft was performed on September 23, 2010. A further evaluation of the leg graft on February 22, 2011 confirmed that it has thrombosed. At this time, exercise was recommended along with usual cardiovascular medications. In March of 2011, he attended a 5.5 hour intensive counseling seminar on whole foods, plant-based nutrition to halt and reverse cardiovascular disease at the Cleveland Clinic Wellness Institute. Within four months his claudication was markedly improved, his blood pressure was normal and he had now lost an additional 15 pounds. Two years following his transition to plant-based nutrition, he is able to walk without discomfort or pain beyond 45 minutes. He has maintained his weight loss and his blood pressure and cholesterol remain normal with minimal medications. Though he is presently retired, he derives satisfaction as a motivational speaker at the Cleveland Clinic Wellness Institute program for the arrest and reversal of cardiovascular disease.

DISCUSSION

These case reports define two distinctly different strategies treating vascular disease. They powerfully illustrate the failure of present cardiovascular therapy to resolve this illness when the underlying cause is not addressed by engaging patients to eat a whole foods, plant-based diet. Current approaches utilize imaging, drugs, procedures, and operations which treat symptoms not disease causation. They are palliative not curative. The inadequacy of these pharmaceutical and interventional undertakings is best illustrated by the multiple invasive procedures utilized time after time despite the lack of success without considering nutritional factors that go beyond the currently accepted dietary guidelines for patients with CVD. These technological failures significantly increase expense, complications, morbidities, and mortality that accompany these repeated efforts and may, in part, explain why the real total direct medical costs of CVD in the United States are projected to triple, from \$273 billion to \$818 billion between 2010 and 2030 (22).

By way of contrast, all three cases promptly responded to plant-based nutrition. All three had been told there was little else to be done for them. All have experienced one or multiple technological failures. When eating a whole foods, plant-based diet, they all have experienced resolution of angina and/or claudication and erectile dysfunction and one has the security that his remaining carotid artery is measurably less stenotic through progressive disease reversal. In one patient, diabetes resolved with no need for medication. In all, weight loss was prominent. Above all, these three men have the sense of empowerment that they themselves are the locus of control to halt the disease that was destroying them. Lest the reader feel that statin drugs might account for this, be assured all three had the full complement of appropriate medications while their disease was worsening.

The obvious question is, why did these men, presumably having the best of cardiovascular care, have to strike out on their own to find the answer for their progressive illness? Cardiologists by and large are caring compassionate and knowledgeable specialists. They, however, have little or no training in nutrition or behavioral modification. Yet for beyond 20 years there have been epidemiological, wartime deprivation, our previous study, randomized and non-randomized studies demonstrating proof of concept that plant-based nutrition may halt and reverse cardiovascular disease (1-3,5-8). We recently summarized our experience treating 200 patients with significant cardiovascular disease. It reviews our whole foods, plant-based nutrition strategy to achieve 89% adherence over 3.7 years with a major cardiac events rate of 1 % (one stroke and one CABG) for those who adhered completely with the prescribed therapeutic whole foods, plant-based diet (23).

The time is long overdue to offer cardiovascular disease patients treatment for the causation of their disease. Thomas Pearson, MD, stated in the *Cardiology Clinics* of February 1996 “the participation of a cardiologist in the general field

of risk analysis and reduction has been variable and is considering the state of current knowledge, fundamentally unsatisfactory”. All patients in a non-emergency situation should be offered the option of plant-based nutrition to halt and reverse their disease by practitioners who are knowledgeable with this approach. The present standard cardiology approach cannot cure patients, nor halt disease development, and is financially unsustainable. The tools are available to end the epidemic of vascular disease. Now is the time for legendary work

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