

Updating a 12-Year Experience With Arrest and Reversal Therapy for Coronary Heart Disease (An Overdue Requiem for Palliative Cardiology)

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Modern cardiology has given up on curing heart disease. Its aggressive interventions—coronary artery bypass graft, atherectomy, angioplasty, and stenting—do not reduce the frequency of new heart attacks or prolong survival except in small subsets of patients.¹ For most patients these procedures do not treat life-threatening plaques.^{1,2} Thus, it is clear that the goal of cardiology has become the relief of pain and unpleasant symptoms in the face of progressive disability and often death from disease. It is time to call this approach by its true name: palliative cardiology. It is also time to acknowledge that this approach is not the only alternative for our patients.

In this article, I will present converging lines of evidence (many of them well-known and universally accepted) reiterating that when serum cholesterol levels are maintained <150 mg/dl, coronary artery disease is practically nonexistent.^{3,4} In a small group of my own patients, a 12-year follow-up shows prospective data confirming that a low-fat diet and lipid-lowering medication causes disease to halt or regress. I will also show that this fact can—and must—be made on the basis of a truly curative cardiology that prevents, halts, and selectively reverses heart disease.

Although coronary artery disease is the leading killer of men and women in the USA, it is rarely encountered in cultures that base their nutrition primarily on grains, legumes, lentils, vegetables, and fruit.^{3,4} In the Framingham study, people with cholesterol levels between 150 and 200 mg/dl accounted for 35% of those with coronary heart disease, but among those with levels <150 mg/dl, the disease was rarely encountered.^{5,6}

For over a decade it has been known that sufficient reduction of lipids may arrest and, in some cases, reverse coronary artery disease.⁷ An analysis of 35 cholesterol-lowering studies confirms that the benefits are directly related to the degree of cholesterol reduction.⁸

This was dramatically confirmed when the Air Force/Texas Coronary Atherosclerosis Prevention Study of cholesterol reduction in >6,500 persons had to be prematurely stopped because of high mortality among controls, who had an average total cholesterol of 221 mg/dl.⁹ During follow-up (mean 5.2 years), there were 95 new myocardial infarctions in the control group and 57 in the treated group.

Modern cardiology identifies patients with coro-

nary heart disease through history, physical examination, and stress studies. Coronary angiography is usually performed. Patients with >70% diameter stenosis often receive aggressive, invasive interventions, including coronary artery bypass grafts, atherectomy, angioplasty, or stenting. Radiation may be added to decrease restenosis after angioplasty, and drugs are prescribed to decrease clotting. These are some of the reasons why the USA spends over a quarter of a trillion dollars a year on heart disease.¹⁰ (In contrast, Canada, with fewer interventions, achieves equivalent survival rates in older patients with coronary artery disease.¹¹)

Most patients who undergo these interventions do not have fewer new heart attacks or longer survival.¹ Life-threatening plaques are not directly treated.² The procedures themselves carry risks of new heart attacks, strokes, infections, encephalopathy, and mortality.¹² In addition, benefits erode with time.¹² A recent *New England Journal of Medicine* editorial pointed out that stents are overused and overpriced, and that some may be implanted without adequate anticoagulants, increasing thrombosis risk.¹³ By using the mortality figures calculated from an earlier study,¹² 1.1% of the 1 million angioplasty, stenting, and atherectomy procedures performed every year and 1.3% of the 1 million annual coronary artery bypass graft procedures, we compute 240,000 deaths in a decade from these procedures.

These mechanical interventions treat only the symptoms, not the disease. It is therefore not surprising that patients who receive these interventions often experience progressive disease, graft shutdown, restenosis, more procedures, progressive disability, and death from disease. Thus, the leading killer of men and women in Western civilization is being left untreated. What is being practiced is “palliative cardiology”: nontreatment of heart disease leading to disease extension and frequently an eventual fatal outcome.

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In contrast, a 5-year experience has shown excellent results in patients with severe coronary artery disease who followed a plant-based diet containing <10% fat and who took cholesterol-lowering medication.¹⁴ During this arrest and reversal therapy their lipid levels fell significantly, they experienced no new coronary events, and angiography showed that their disease had stabilized and in some cases selectively reversed. The goal at study onset in 1985 had been to achieve a total serum cholesterol of <150 mg/dl, the level seen in cultures where coronary artery disease is virtually absent.³

Today, after 12 years, I have followed the original

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TABLE I Lipid Profiles of 18 Patients Following a Very Low Fat Diet

Patient	At Five Years				At 12 Years			
	Total Cholesterol (mg/dl)	LDL (mg/dl)	HDL (mg/dl)	Triglycerides (mg/dl)	Total Cholesterol (mg/dl)	LDL (mg/dl)	HDL (mg/dl)	Triglycerides (mg/dl)
1	137	91	28	108	138	85	30	128
2	136	72	33	167	138	73	33	175
3	130	72	37	127	145	78	37	143
4	124	58	33	206	Deceased			
5	110	65	29	97	112	64	30	96
6	142	75	52	78	148	80	41	109
7	140	77	43	117	154	86	40	155
8	150	63	32	362	161	77	30	351
9	146	90	40	91	160	89	41	93
10	130	76	41	72	145	90	44	99
11	112	48	31	188	114	48	33	180
12	137	92	26	113	140	90	27	133
13	168	85	64	78	162	84	68	65
14	170	98	38	254	159	87	45	183
15	124	72	32	104	139	85	35	119
16	129	62	26	226	145	70	27	246
17	137	81	39	68	161	100	48	60
18	143	88	35	113	151	102	29	103
Mean	137	76	37	143	145	82	38	143

patient cohort to determine adherence, safety, adverse effects, and long-term benefits. The original cohort contained 1 woman and 23 men, all nonsmoking, nondiabetic, and nonhypertensive patients with severe, angiographically demonstrated coronary artery disease. They agreed to follow a plant-based diet with <10% of calories derived from fat. They were asked to eliminate oil, dairy products (except skim milk and no-fat yogurt), fish, fowl, and meat. They were encouraged to eat grains, legumes, lentils, vegetables, and fruit. Cholesterol-lowering medication was individualized. The only goal was to achieve and maintain a total serum cholesterol of <150 mg/dl.

Six nonadherent patients were released within the first 12 to 18 months of the study, and they returned to standard care. By 1998, these patients, who initially had levels of angiographic and clinical disease equivalent to those of the adherent patients, had sustained 13 new cardiac events. The remaining 18 patients adhered to the study diet and medication for 5 years. At 5 years, 11 of these patients underwent angiographic analysis by the percent stenosis method, which demonstrated disease arrest in all 11 (100%) and regression in 8 (73%).¹⁴ One patient admitted to the study with <20% left ventricular output died from a ventricular arrhythmia just weeks after the 5-year follow-up angiogram had confirmed disease regression. Autopsy revealed no myocardial infarction. Angina initially reported in 9 patients was eliminated in 2 and improved in the remaining 7. The patients' mean prestudy total cholesterol decreased from 237 to 137 mg/dl over 5 years.

During the 7 years since the conclusion of the 5-year study, all but 1 patient have continued to adhere to the prescribed diet and medication. Today, 12 years after study inception, the mean total cholesterol of the patients is 145 mg/dl (Table I).

Adherent patients have experienced no extension of clinical disease, no coronary events, and no interventions. This finding is all the more compelling when we consider that the original compliant 18 participants experienced 49 coronary events in the 8 years before the study.

These results are particularly important because they show that arrest and reversal therapy stops, rather than slows, coronary atherosclerosis. I argue that we must redefine what we mean by the phrase "the treatment of coronary atherosclerosis." We must shift the paradigm from interventional palliative cardiology to arrest and reversal therapy, which achieves numerical lipid goals that, when maintained, will abolish disease extension.

Adherence is the key factor upon which arrest and reversal therapy depends. Four techniques were used to promote adherence and reinforce the plant-based diet: (1) At enrollment, treatment objectives were discussed in an in-depth, 60- to 90-minute interview with each participant and spouse. (2) Patient adherence and lipid results were monitored through biweekly visits for the first 5 years. Such immediate recognition in achieving lipid goals is critical reinforcement and provides the patient with real-time proof of success. Visits became monthly during the second 5-year period and have been quarterly for the past 2 years. (3) Throughout the first year I called each patient on the evening of the clinic visit to review the lipid profile and any needed dietary or medication adjustments. (4) Several times a year a group meeting was held at my home or the home of a participant to review treatment objectives, exchange menus, and socialize. Continued frequent patient encounters appear critical to teach dietary knowledge and reinforce new habits. Patients reported that their physician's commitment to the same diet was additional motivation.

The study focused solely on lipid reduction through medication and diet, addressing, as Roberts has stated, “the only true risk factor for coronary artery disease—a cholesterol above 150 mg/dl.”¹⁵

Combining a plant-based diet with medication achieves better long-term results than changing diet alone or combining modest diet changes and medication.^{16–18} With such compelling long-term benefits, patients become empowered because they feel in control of the disease that was formerly destroying their lives.

The successful results from arrest and reversal therapy in this group of patients suggests it should be offered to all patients with coronary heart disease. These significant lipid reductions were undoubtedly because of our unrelenting persistence in dietary compliance combined with a statin agent. Nevertheless, these reduced lipid levels are still in the range of normal for nations where the disease is absent.

Despite the benefits of a low-fat diet and of low lipid levels, the American Heart Association, the National Research Council, and the National Cholesterol Education Program recommend a 30% threshold for fat calories in the diet and a total cholesterol not >200 mg/dl.^{19,20} But coronary artery disease develops and progresses with these guidelines, condemning millions of Americans to this epidemic.^{9,16,18}

By way of contrast, no one maintaining a total serum cholesterol <150 mg/dl has succumbed to coronary artery disease in the Framingham study.⁶ Campbell et al,⁴ in the Cornell-China study, reports hundreds of thousands of rural Chinese going years without a single coronary event.

Epidemiologic and evidence-based research has identified a lipid threshold for preventing the coronary artery disease epidemic. We have demonstrated that this threshold can be achieved and maintained with a plant-based diet and lipid-lowering medication when indicated, and that maintaining low lipid levels arrests and often reverses coronary artery disease.

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