Reduction of Cholesterol and Lp(a) in Regression of Coronary Artery Disease: A Case Study

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Abstract

Data in the literature suggests that elevated Lp(a) contributes to coronary artery disease. This case study documents the use of ascorbic acid, amino acids lysine and proline, an ayurvedic herb gum guggulu, pure crystaline niacin , and guar gum in lowering Lp(a). These natural substances were well tolerated and each lowered Lp(a) significantly. In this study (32 months duration) one of the above mentioned substances and/or an increase or change in dosage was given approximately every two months to a 62 year old female with extremely elevated familial Lp(a). Blood lipids were drawn and results were recorded before changes were made. At the end of 32 months Lp(a) was reduced by 8l points or 63%. Significant re gression of coronary artery blockages was documented by a Board Certified Cardiologist who analyzed two angiograms performed one and half years apart, the latter performed 19 months after the study began. It was also observed that Lp(a) decreased directly in relation to the decrease in LDL. Research with clinical studies is recommended to test the efficacy of the above-mentioned nutritional substances in lowering Lp(a) and in both lessening the risk of coronary artery disease and in regressing already existing disease. This is especially crucial for those families with a strong history of familial coronary artery disease and elevated Lp(a).

Introduction

This 62 year old white female presented with an elevated cholesterol and an extremely elevated Lp(a) one year post angioplasty. Her family history was positive for hypercholesteremia, hypertension, and premature death due to coronary artery disease and cardiovascular accident. Her father died at age 43 of CAD having lived the longe st of his four siblings. His two sisters died of CAD at ages 29 and 33, a brother died of a CVA at age 39, and the other brother died at 41 of CAD. Patient's only sibling had an angioplasty at age 57 and coronary artery by-pass surgery at age 59. He died one week post bypass due to medial cystic necrosis. Out of six cousins on her paternal side; one male died at age 50 after suffering from CAD for 10-15 years, his sister, has had several heart attacks since her late forties, has had a coronary artery by-pass and is alive at age 72; another male died suddenly at age 52 of a CVA; one female died at age 59 after having undergone two coronary by-passes and many heart attacks since she had been 35 years old; her surviving brother at age 69 has had two coronary by-pass operations and several heart attacks over the past 25 years; one male cousin, age 70, has no symptoms of CAD.

At the time of her angioplasty, patient's cholesterol was elevated, ranging from 275-296, LDL was high and her ordinarily high HDL had fallen. At one point the ratio between her total cholesterol and her HDL had risen to 8. She had been put on three separate trials of lovastatin; however, each time she had to cease taking the medication due to severe intolerance. After consulting a lipid specialist in a large teaching hospital, she was put on a trial of cholestyrimine. This regime lowered the total cholesterol and LDL and the HDL increased to its more usual higher level however, the triglycerides increased. The ratio between her total cholesterol and HDL had improved.

Documentation

The following report documents the history of patient's regime following the

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discovery of extremely elevated Lp(a). Thirteen months post angioplasty the patient was referred to a lipid specialist who was eager to help better manage her lipids and to further investigate the nature of the patient's problem. A thorough physical examination was performed including an examination of the skin and the eyes for evidence of cholesterol. There was no surface evidence; however the physician discovered the beginning signs of cholesterol deposits in the left eye. Even though pterygia is not associated with lipids, it is interesting to note that the patient had noticed yellowing (pterygia) in the left eye approximately twenty years earlier. The right eye had been clear until the time of the angioplasty and the increase in her lipids at which time pterygia appeared in her right eye. The physician had also done a thorough lipid study. The results are as follows; Total cholesterol 185 mg/dl; LDL cholesterol 94 mg/dl; HDL cholesterol 59 mg/dl; triglyc-erides 166 mg/dl; Apolipoprotein B 91 mg/dl; Lp(a) 128 mg/dl. The Lp(a) was well above the "less than 20 mg/dl" recommended by the testing laboratory. The only lipid medication the patient was taking at that time was cholestyrimine.

The patient decided to research natural substances advocated by some physicians and scientists to lower cholesterol in the hopes of discovering a mechanism to lower Lp(a). She had been on 1 gram of niacin for over twenty years, had been a long distance runner (including having run a marathon at age 59), and practiced stress reduction techniques twice daily for the same length of time. She had been on a very low fat, low cholesterol diet as prescribed by the Pritikin Longevity Center where she had been a participant many times.

For the most part on the low fat, low cholesterol diet, her cholesterol remained between 200 and 240 with the average approximately 220. Before changing her lifestyle to this extent, her cholesterol had been 299. Her lipid specialist neither approved nor disapproved of the experimental regime, but agreed to monitor her blood chemistry including her lipids and liver function.

Research

Since there were no known medicines to lower Lp(a) other than niacin and estrogen (and perhaps Tamoxifen), and it is well known that elevated Lp(a) is a major risk for heart attacks and strokes,[1] the patient decided to research substances which would lower Lp(a). She had come across the newsletter, *Health and Healing*, by Julian Whitaker earlier and was struck by the information on reduction of cholesterol by gugulipid, a standardized extract of the Commiphora muklul plant. According to the article, with 200 mg four times a day, "One can expect a drop in total cholesterol levels of approximately 24%, an increase of HDL cholesterol of 16%, and a decrease in triglycerides of 23%".[2] According to Murray, Gugulipid is an effective lipid-lowering agent.[3] Safety studies with rats, rabbits, and monkeys have demonstrated that gugulipid is nontoxic.[3] Studies have shown that gugulipid prevents the formation of other sclerosis and aids in the regression of pre-existing atherosclerotic plaques. This extract also appears to prevent heart damage by free radicals as well as to improve the metabolism of the heart. Gugulipid has a mild effect in inhibiting platelets from aggregating.[1,3] Several clinical studies have confirmed that gugulipid has an ability to lower both cholesterol and triglyceride levels.[1,3] Typically, cholesterol levels will drop l4-27% in a four to twelve week period and triglyceride levels will drop 22-30%.[3] Pauling's concept of orthomolecular medicine, which seeks nutritional solutions to diseases based on taking in the 'right' [ortho] molecules in the right amounts and eliminating the wrong ones, is highly applicable to preventing or alleviating cardiovascular problems.[4]

Methodology

The procedure was to introduce a new substance after the results of the previous

test, that is, approximately every two months. One hour aerobic exercise six to seven days per week, twice daily stress reduction practice (20 minutes each), remained constant and had been practiced for approximately 20 years prior to this study. A low fat diet remained stable; however, it became more stringent almost 100% vegetarian. Egg whites and non-fat dairy products were consumed in moderation. Patient tried to maintain a 10% fat intake daily and only on occasion 5-10 mgs of cholesterol. The patient continued her long term use of vitamins B, C, E, calcium and anti-oxidants. Hormone replacement therapy commenced six months prior to the initial exam and onset of the study and remained constant. Estrace l mg. and Provera 2.5mg daily were prescribed.

Any substance introduced with the intention to specifically alter lipids was tried one substance per blood drawing interval as noted in **Table 1** (p 176). Table 1 covers 32 months, from April 4,1993 until December 22,1995. Included are the different substances ingested and the results of lipid blood chemistry taken at approximately two month intervals.

Analysis

Because of the above reports, patient decided to explore gugulipid as the first Lp(a) lowering agent. For the purpose of this paper, gugulipid will be described by the content of the substance used, guggulsterones referring to 25 mg per dose except for the first introduction which was a form of gugulipid which combines other ingredients with gum guggulu. After the first blood test, patient introduced gugulipid 250 mg 3 times per day. There was a rise in total cholesterol, a rise in HDL and LDL, a lowering of triglycerides and a significant lowering of Lp(a) of 33 points or approximately 28%.

The first large drop in total cholesterol and a second drop in Lp(a) occurred between 5/3/93 and 6/18/93 with the introduction of guggulsterones 25 mg. 4 times per day and niacin 1 gram per day. Total cholesterol dropped 46 points, triglycerides dropped 82 points, HDL increased four points, LDL decreased 47 points and Lp(a) decreased 33 points. With the introduction of lysine and garlic, values of 9/1/93 reveal another impressive drop of 25 points in total cholesterol. Other values improved and there was another drop in Lp(a) of 16 points resulting in a total drop in Lp(a) of 84 points since 4/4/93. Lysine has been shown to act as an anti-adhesive material to the binding of lipoprotein(a) particles inside the blood vessel wall and can thus reverse atherosclerotic deposits.[1]

With the introduction of 6 g of vitamin C, (ascorbic acid), bloods values of 12/8/93 are similar across the board except for a 10 point increase in total cholesterol to 153 and an 18 point increase in Lp(a). According to Rath, vitamin C along with niacin can lower blood levels of Lp(a).[1] Niedzweiki states that clinical studies have shown that vitamin C can lower elevated LDL levels and increase HDL. Studies at LPI with guinea pigs suggest that large dosages of vitamin C can prevent pathologic changes in blood vessel walls generated by atherosclerotic diets.[5]

In the paper *A Unified Theory of Human Cardiovascular Disease*, Rath and Pauling state that "Ascorbic deficiency is the precondition and common denominator of human CVD."[6] They continue, "The metabolic level is characterized by the close connection of ascorbate with metabolic regulatory systems that determine the risk profile of CVD in clinical cardiology today. The most frequent mechanism is the deposition of lipoproteins, particularly lipoprotein(a) [Lp(a)], in the vascular wall. With sustained ascorbate uptake,these defense mechanisms overshoot and lead to the development of CVD."[6]

Two additions are reflected in the blood values of 2/16/94, i.e., an increase of lysine to 4 g and an increase of vitamin C to 8 g. The values reflect an overall de-

Table 1. Results of Lipid Blood Chemistry Over 32 months: From April 4,1993 until December 22,1995. Included are the different substances ingested and the results of lipid blood chemistry taken at approximately 2 month intervals.

Date	Substance	Cholesterol	Triglycerides	HDL	LDL	Lp(a) JH	Lp(a) PB
4/4/93	Cholestyrimine	185	166	59	94	128	n/a
5/3/93	Cholestyrimine Gugulipid 750 mg	214	153	66	117	95	n/a
6/18/93	Guggleserones 100 mg Niacin 100 mg	168	71	70	70	60	n/a
9/1/93	Guggleserones 100 mg Lonicin 1 gm* Lysine 2 gm Garlic 1.5 gm	143	67	68	62	44	n/a
12/8/93	Guggleserones 100 mg Lonicin 1 gm* Lysine 2 gm Garlic 1.5 gm Vitamin C 6 gm	153	65	70	76	62	n/a
2/16/94	Guggleserones 100 mg Lonicin 1 gm* Lysine 4 gm Garlic 1.5 gm Vitamin C 8 gm	146	63	61	73	38	62
4/22/94	Guggleserones 100 mg Lonicin 1 gm* Lysine 4 gm Garlic 1.5 gm Vitamin C 8 gm	163	88	66	79	35	58
5/23/94	Guggleserones 100 mg Niacin 1 gm (time-release) Lysine 4 gm Garlic 1.5 gm Vitamin C 8 gm	177	90	55	104	n/a	85
7/22/94	Guggleserones 100 mg Niacin 1 gm** Guar Aid 1Tbls*** Lysine 4 gm Garlic 1.5 gm Vitamin C 8 gm	186	85	60	107	46	85
9/7/94	Guggleserones 100 mg Niacin 1 gm** Guar Aid 3 Tbls*** Lysine 4 gm Garlic 1.5 gm Vitamin C 8 gm	159	55	80	68	53	70
10/31/94	Guggleserones 100 mg Niacin 3.2 gm**	113	34	64	42	30	47

Date	Substance	Cholesterol	Triglycerides	HDL	LDL	Lp(a) JH	Lp(a) PB
	Guar Aid 3 Tbls***						
	Proline 2.7 gm						
	Lysine 4 gm						
	Garlic 1.5 gm						
	Vitamin C 8 gm						
12/28/94	Guggleserones 100 mg	162	86	59	86	68	110
	Niacin 1.5 gm**						
	Guar Aid 1.5 Tbls***						
	Proline 2.7 gm						
	Lysine 3 gm						
	Garlic 1.5 gm						
	Vitamin C 7.5 gm						
3/31/95	Guggleserones 100 mg	159	73	61	83	63	72
	Niacin 1.5 gm**						
	Guar Aid 2 Tbls***						
	Proline 2.7 gm						
	Lysine 3 gm						
	Garlic 1.5 gm						
	Vitamin C 7.5 gm						
6/16/95	Guggleserones 100 mg	185	70	64	107	60	79
	Niacin 1.5 gm**						
	Guar Aid 2 Tbls***						
	Proline 2.7 gm						
	Lysine 3 gm						
	Garlic 1.5 gm						
	Vitamin C 7.5 gm						
8/9/95	Guggleserones 100 mg	174	71	66	94	47	68
	Niacin 1.5 gm**						
	Guar Aid 2 Tbls***						
	Proline 2.7 gm						
	Lysine 4 gm						
	Garlic 1.5 gm						
	Vitamin C 7.5 gm						
9/7/94	Guggleserones 100 mg	176	85	65	94	63	72
	Niacin 1.5 gm**						
	Guar Gum 1 Tbls***						
	Proline 2.7 gm						
	Lysine 4 gm						
	Garlic 1.5 gm						
	Vitamin C 7.5 gm						
9/7/94	Guggleserones 100 mg	170	61	68	90	47	62
	Niacin 1.5 gm**						
	Guar Gum 1 Tbls***						
	Proline 2.7 gm						
	Lysine 4 gm						
	Garlic 1.5 gm						
	Vitamin C 7.5 gm						

* Lonicin: formula = Pure crystalized niacin, guar gum and vitamin C
** Pure crystalized niacin
*** Guar aid was a combination of guar gum and vitamin C

crease in lipids across the board including a 9 point decrease in HDL. Total cholesterol decreased 7 points to 146 and Lp(a) decreased 24 points to 38 , 90 points lower than the first Lp(a) reading 10 months prior. At this time, another lab was introduced to measure Lp(a) because the physician monitoring the patient believed it to be more accurate. For the purpose of this paper the readings of the first lab will be considered primary since it is constant; however readings from the additional lab will be included. For the most part, even though the numbers are different, results from both labs move in the same direction.

On 4/22/94, all values increase slightly including HDL ; however, there was a drop in Lp(a), 3 and 4 points respectively from each lab. This change was necessitated by the discontinuance of the manufacturing of Lonicin, the specific formula comprised of pure crystalized niacin, guar gum, and vitamin C. The values drawn on 5/23/94 represent a change in the brand of niacin to a time release formula. The results of blood values drawn reveal an increase in all values and a decrease in HDL with a 27 point increase in Lp(a). The values drawn on 7/22/94 represent the addition of 1 tablespoon of Guar Aid (guar gum fiber and vitamin C), and a change to pure crystallized niacin,[7] with values moving both up and down however only slightly.

Blood values drawn on 9/7/94 represent an increase in Guar Aid to 3 tbsp. Values dropped significantly across the board; 27 points in total cholesterol, 30 in triglycerides, an increase of 20 points in HDL, a decrease of 39 in LDL and an increase of 7 points in Lp(a) from the first lab and a decrease of 15 points from the second lab. October 31,1994 represents an increase in pure crystalized niacin to 3.2 grams and an introduction to proline 2.7 grams.[8] Values improved across the board with a lowering of total cholesterol 46 points to 113, lowering of triglycerides 21 points to 34, HDL lowered to 64, LDL lowered 26 points to 42, and Lp(a) lowered 23 points to 30 and 23 points to 47 respectively. A new therapeutic approach is the use of L-lysine and L-proline. These natural amino acids provide a teflon layer which detaches lipoprotein(a) and other risk factors from their deposits inside the blood vessel wall. By releasing thousands of lipoprotein(a) particles from the blood vessel wall lysine and proline help reverse existing cardiovascular disease.[1]

Values drawn on 12/28/94, represent a reduction of niacin to l.5 grams, a reduction of Guar Aid to $1\ 1/2$ tbsp, a reduction of lysine to 3 g and a reduction of vitamin C to 7.5 g. Values increased across the board with a 49 point reduction in cholesterol, a 5 point reduction in HDL and a 38 and 63 point increase in Lp(a) respectively. An angiogram had been performed 5 weeks prior to this drawing which may have affected Lp(a).

The values on 3/31/95 represent an increase of Guar Aid to 2 tbsp. Values were reduced across the board and there was a 3 point increase in HDL. Lp(a) was reduced by 5 points and 3 8 points respectively. The values of 6/16/95 utilizing the same substances vary both upward and downward with a total cholesterol of 185, an increase of 26 points, an increase of HDL of 3 points, a slight increase in one lab and and decrease in the other with regard to Lp(a).

The values of 8/9/95 represent an increase of lysine to 4 g and blood values were reduced across the board with a lowering of total cholesterol 11 points, an increase in HDL of 2 points, and a decrease in Lp(a) 13 and 11 points respectively. The values of 9/22/95 represent a change to pure guar gum, one tbsp, (a decrease in the amount of guar gum) and values remain relatively unchanged except for the Lp(a) which increased 16 points and 4 points, respectively. No changes in substances nor amounts taken were made in the period reflected by the blood results

of 12/22/95. Cholesterol reduced by 6 points, triglycerides by 24 points, HDL increased 3 points, LDL decreased 4 points and Lp(a) was reduced by 16 and 10 points in the results of the respective labs.The most outstanding change in blood values in the 32 months followed was the dramatic decrease in Lp(a), 81 points from the first to the last drawing, a total of 63%.

Results

Significant lowering in all blood lipid values including Lp(a) and excluding HDL is evident. Examination of the eyes by the lipid specialist $1^1/_4$ years after the initial exam no longer shows evidence of cholesterol deposits in the left eye. Pterygia in both eyes has diminished. Thallium stress test has improved by $1\ ^1/_2$ minutes in duration totaling $16\ ^1/_2$ minutes on the standard Bruce protocol and reveal normal profusion. Cardiac catheterization on 11/23/94 revealed a reduction of stenosis of the mid RCA from 75% to 40% since prior catheterization of April, 1993. Other lesions approximately 50% and less noted in 1993 were not noted in 1994. Analysis of the two catheterization by a Board Certified Cardiologist verified the significant reduction of coronary artery disease.

Conclusions

1) This individual did indeed reduce the severity of her CAD by reducing the blockages in her arteries.

2) The substances, vitamin C, pure crystalized niacin, guar gum, two specific amino acids, lysine and proline, and an herb composed of guggulsterones contributed to the significant reduction of cholesterol and Lp(a) and improved lipid profile thus leading to the regression of blockages in her coronary arteries.

3) Lp(a) can be reduced significantly with vitamin C, pure crystalized niacin, guar gum, lysine, proline and guggulsterones.

4) Reversal of coronary artery disease can be accomplished by a reduction of Lp(a) through the use of a combination of vitamin C, pure crystalized niacin, lysine, proline, guggulsterones and guar gum.

5) Reduction of coronary artery disease can be accomplished by nutritional substances in addition to a strict regimen of diet, exercise and the practice of stress reduction techniques.

Recommendations

It is important to do clinical studies with control groups to research the effect of the combination of ascorbic acid, guggulsterones, lysine, proline, pure crystallized niacin and guar gum in reducing elevated Lp(a) and coronary artery disease. This is especially crucial for those families who have a strong history of early CAD and high Lp(a).

Since there is no prescription medicine readily available to lower Lp(a) and it is known that elevated Lp(a) is a significant factor in developing CAD,[1,6] the above-mentioned nutritional substances can be crucial in improving the health and increasing the longevity of individuals and families with elevated Lp(a).

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