EFFECT OF EDTA CHELATION AND SUPPORTIVE MULTIVITAMIN/TRACE MINERAL SUPPLEMENTATION WITH AND WITHOUT PHYSICAL ACTIVITY UPON SYSTOLIC BLOOD PRESSURE

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Introduction

The following four items serve as an excellent introduction to and justification for this report. First, the evidence is now abundant that cardiovascular pathosis is of epidemic proportions. Second, the salutary effects of physical activity upon cardiovascular function in health and sickness are becoming rapidly and increasingly more apparent. Third, what is also becoming more clear is that exercise, like all other treatment modalities, is fraught with limitations. Fourth, finally, and not too well appreciated and therefore more controversial, is the possibility of utilizing EDTA chelation as an effective cardiotherapeutic tool.

This is the second in a series of reports designed to cast additional light on the overall relationship of physical activity and chelation therapy with multivitamin/trace mineral support upon cardiovascular syndromes by answering the following three questions:

1. What are the posttherapy effects of EDTA chelation upon submaximal systolic blood pressure?

2. What are the posttherapy effects of EDTA chelation plus an aerobic exercise program on submaximal systolic blood pressure?

3. On the basis of the information derived from these two questions, what philosophic and clinical conclusions can be derived?

Review of the Literature

One variable which can be readily employed to assess cardiovascular fitness is the systolic blood pressure response to physical

activity. In the overall, there have been conflicting reports in the literature regarding the effect of an aerobic exercise program upon systolic blood pressure. The consensus is that an exercise program will either lower or not alter a submaximal systolic blood pressure.

In a study done in Dallas in 1968[1], five subjects, ages 18-21, were placed on an exercise program for a total of 55 days. The participants exercised 1 1/2 hours per day and six days per week. The investigators concluded no change in submaximal blood pressure.

In Stockholm in 1969[2], 19-27 year old subjects were exercised for 20 days. All participants exercised three days per week and for one hour per day. The researchers reported no change in submaximal systolic blood pressure.

Studies in older subjects have yielded somewhat different results. Kelbom, Hartley, Saltin, Bjure, Gremby and Astrand[3] exercised 15 subjects (ages 38 to 55) for 63 days and one hour per day. This team reported a decrease in systolic blood pressure following the exercise program.

Varnauskas, Bergman, Houk and Bjountorp[4] studied five coronary heart disease subjects (the subjects ages ranged from 44 to 45) who exercised for 180 days, three days per week and 1/2 hour per day. The conclusion was that there was a decrease in submaximal systolic blood pressure.

A final study carried out in Seattle in 1971[5] netted slightly different results. The authors exercised six patients (ages 34-68) who demonstrated angina with activity, for a period of 90 days. Each

subject exercised three days per week and approximately 45 minutes per day. The study showed no change in submaximal systolic blood pressure following this exercise program.

In summary, there have been contradictory results obtained utilizing subjects of different ages and health status with regard to changes in submaximal systolic blood pressure following an exercise regime.

What is especially relevant here is that, as far as we can ascertain, there have been no studies on the possible effect of EDTA chelation and supportive multivitamin/trace mineral supplementation upon systolic blood pressure response to submaximal work.

Method of Investigation

Fifty patients participated in this experiment. The subjects were divided into two groups: exercisers and nonexercisers. Exercisers participated in at least three exercise sessions per week; each period a minimum of 20 minutes duration and this was maintained throughout the course of treatment. The exercise sessions consisted on continuous activity such as walking, rowing and/or cycling at 70% to 85% of the subject's maximal heart rate.

All participants had either a history of cardiac problems or were considered cardiac-prone based upon family history, elevated blood pressure and/or obesity. All subjects underwent treadmill evaluation. One test was administered prior to the onset of the treatment regimen. The protocols employed for the maximal tests were varied based on the age and the work capacity of the patients. Most subjects under-

went a standard Bruce test, but on certain individuals a modified Bruce, Naughton or Ellstadt test was performed. All subjects received the same protocol at the pre- and post-test examinations. Heart rate, blood pressure and S-T segment depression on a standard 12 lead EKG were recorded at the end of each stage. End points of the maximal test were either reported angina, 2 mm S-T segment depression, systolic blood pressure greater than 250 mm Hg, a diastolic blood pressure greater than 110 mm Hg, or the patient's request to halt the testing procedure. All participants were verbally encouraged to achieve their highest work load. All tests were administered by the same individual (D.G.W.).

The treatment program for all subjects consisted of a series of infusions of EDTA along with supportive multivitamin/trace mineral supplementation approximately 5X to 10X the Recommended Dietary Allowances (RDA) as previously reported[6-11]. More particulars may be obtained by communicating directly with the authors.

The patients were measured at each work load throughout the testing event. The systolic blood pressure was recorded during the last minute of each state and, thus, pre- and post-therapy comparisons could be made. The student t-test was utilized to analyze the statistical differences at each stage. The 5% level of confidence was used as the delineating point for statistical significance.

The general data for this experiment are summarized in Table 1. It is clear that there is no statistically significant differences of the means for age and number of infusions. It is noteworthy that the exercise chelation groups completed its course of treat-

ment in significantly fewer days than did the nonexercise chelation subjects.

Results

Question One: Table 2 summarizes the systolic blood pressure findings for the nonexercise chelation group prior to the onset of therapy and at the termination of the treatment regime as judged at all three stages. The findings are clear. At each stage, there is a statistically significant decline in systolic blood pressure. The percent change between the pre- and post-test becomes slightly less with each stage (8.7%, 6.7%, and 5.8%). Hence, in answer to the first question, it is evident that EDTA chelation plus supportive multivitamin/trace mineral supplementation significantly reduces systolic blood pressure at all stages as judged by a graded exercise test technique.

Question Two: Table 2 also summarizes the systolic blood pressure findings in the chelation group plus exercise prior to the onset of theraphy and at the termination of the treatment regimen as judged at all three stages. The findings are clear. At each stage there is a statistically significant decline in systolic blood pressure. The percent difference between the pre- and post-test becomes slightly less with each stage (8.6%, 7.4%, and 6.2%). Thus, in reply to the second question, it is clear that EDTA chelation with multivitamin/trace mineral support plus exercise significantly reduces systolic blood pressure at all stages as judged by a graded exercise test technique.

Discussion

Question Three: The critical question is whether adding physical exercise to the chelation multivitamin/trace mineral regimen

TABLE I

general data

	chelation N=27		exercise & chelation N=23		t score
	mean	s.d.	mean	s.d.	
age	61.4	8.6	58.6	9.3	1.68*
no. of infusions	34.3	10.4	31.2	14.9	1.51*
no. of pre to post test	239.6	156.2	109.6	88.2	3.68**

*no significant differences between the means
**significant at .05 level

TABLE II

systolic blood pressure response

	chelation plus exercise group				chelation group			
stage	pre	post	percentage change	t	pre	post	percentage change	t
I	152.8 ±18.3	139.6 ±21.1	-8.6%	3.10 P<0.010*	154.3 ±19.5	140.9	-8.7%	3.24 P<0.005*
II	161.0 ±20.7	149.0 ±25.3	-7.4%	2.58 P<0.025*	162.4 ±20.1	151.5 ±22.6	-6.7%	2.88 P<0.010*
III	171.7 ±20.7	160.0 ±24.9	-6.2%	2.61 P<0.025*	177.3 ±24.9	167.0 ±24.0	-5.8%	3.01 P<0.010*

*statistically significant difference of the means

TABLE III

significance of t scores between groups

	chelation	exercise plus chelation	percentage difference	t score
stage I				
pre	154.3	152.8	1.0%	0.27
post	140.9	139.6	0.9%	0.22
stage II				
pre	162.4	151.5	6.7%	0.25
post	161.0	149.0	7.4%	0.36
stage III				
pre	177.3	167.0	5.8%	1.00
post	170.7	160.0	6.2%	1.00

makes a significant difference in systolic blood pressure. Utilizing the student t-test, there are no differences, though on a mean basis there appears to be a slightly greater percentage change when physical activity is incorporated into the treatment regime.

It is of interest that there is general agreement that, just as with heart rate, there is also a linear relationship between systolic blood pressure and increasing work. This relationship is clearly underscored in this report.

Systolic blood pressure is surely a measure of cardiovascular fitness. Physical training (exercise) has been shown, in some studies, to reduce systolic blood pressure during submaximal work. Other studies have indicated no change in systolic blood pressure with physical training. Clearly, with a reduction in systolic blood pressure, more work is allowed to be performed with less cardiac strain or stress. This phenomenon is highly beneficial to so-called healthy people but to a heart patient this decrease can be critical.

It appears from our observations, within the limits of this study, that chelation therapy with multivitamin/trace mineral support significantly reduces systolic blood pressure during submaximal work (Figure 1). This is consistent with our earlier findings with heart rate (Figure 2)[12]. This point, as far as we can determine, has never been previously reported. Our work suggests that there may be an additional very slight reduction in submaximal systolic blood pressure when an aerobic exercise program is added to the chelation regimen. It must be underscored that this slight additional decrement was not statistically significant. For the reasons provided here plus the confusion in

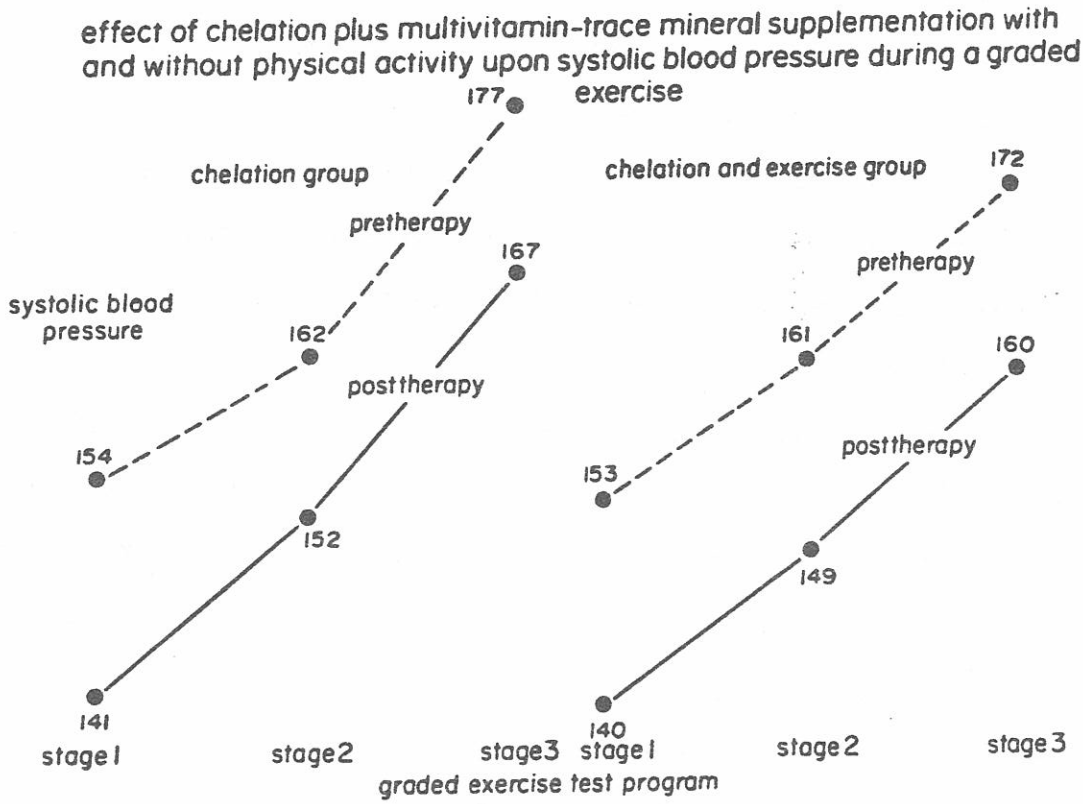
effect of chelation plus multivitamin-trace mineral supplementation with and without physical activity upon systolic blood pressure during a graded exercise
chelation group
pretherapy
177
167
systolic blood pressure
162
posttherapy
154
152
141
stage 1
stage 2
stage 3
chelation and exercise group
172
pretherapy
161
160
posttherapy
153
149
140
stage 1
stage 2
stage 3
graded exercise test program

Figure 1

effect of chelation plus multivitamin-trace mineral supplementation with and without physical activity upon heart rate during a graded exercise test.

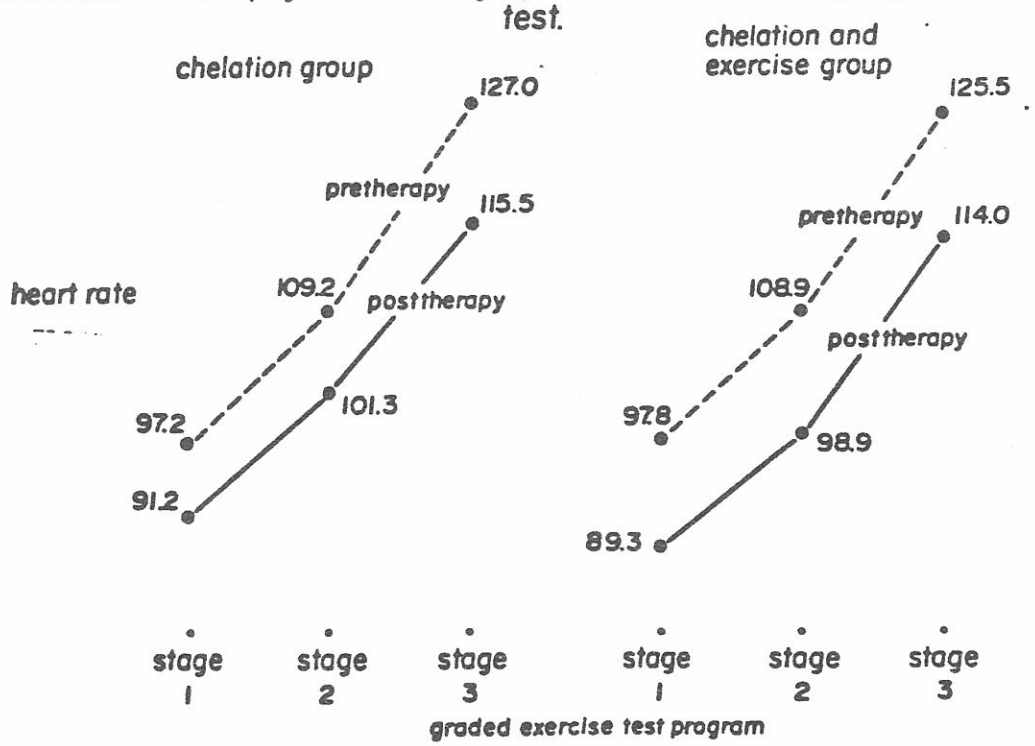

Figure Two

the literature, it would appear that EDTA may well serve as a useful additional tool in the management of the systolic blood pressure aspect of certain cardiac syndromes.

While this experiment surely answers some questions, it generates others. In a report to follow[13], the relative effects of EDTA chelation plus multivitamin/trace mineral therapy upon another barometer of cardiovascular health, specifically diastolic blood pressure, will be examined.

Summary

The effect of an exercise program on the systolic blood pressure response to submaximal work has been reported by others. What now has not been examined is the possible effect of EDTA chelation therapy with multivitamin/trace mineral supplementation upon systolic blood pressure. The evidence presented in this report indicates that systolic blood pressure can be statistically significantly reduced with chelation.

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