EDTA Chelation Therapy

A Non-surgical Treatment for Heart Disease and Atherosclerosis
Textbook for Healthcare Professionals
Edited by Elmer M. Cranton, M.D.
Foreword by Linus Pauling, Ph.D.
Book for the general public by Elmer M. Cranton, M.D.
500,000 copies sold
A Simple 3-hour Office Procedure

- No need for a hospital
- Patients walk, drive or ride safely to and from treatments
- 3 hour intravenous infusions of EDTA for 20 to 30 treatments
- Administered safely by a nurse
Diseases Treated

- Heart: coronary artery disease
- Brain: cerebral vascular disease
- Legs: peripheral vascular disease
  -- diabetic ulcers and gangrene
- Atherosclerosis anywhere
- Scleroderma
- Other age-related symptoms
Ethylene Diamine Tetraacetic Acid

Disodium EDTA
At physiologic pH has 2 sodium ions and 2 hydrogen ions attached
Mechanism of Benefit Uncertain

- EDTA binds to metals and is rapidly excreted in urine
- Not metabolized—excreted unchanged with metals
- Half-life less than one hour, requiring 3-hour infusions
- Disodium-EDTA removes calcium (but not calcium-EDTA)
- Metal catalysts can greatly increase free radical damage
- All metals are toxic in excess or if misplaced in body
- Essential nutritional metals increase to toxic levels in various organs with ischemia, disease, and age
- Chelation of only toxic metals does not explain full benefit
### Increase in urinary excretion of metals following I.V. disodium EDTA

<table>
<thead>
<tr>
<th>Nutritional Elements</th>
<th>Toxic Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese</td>
<td>132 times baseline excretion</td>
</tr>
<tr>
<td>Zinc</td>
<td>62 times baseline</td>
</tr>
<tr>
<td>Iron</td>
<td>56 times baseline</td>
</tr>
<tr>
<td>Cobalt</td>
<td>12 times baseline</td>
</tr>
<tr>
<td>Calcium</td>
<td>10 times baseline</td>
</tr>
<tr>
<td>Lead</td>
<td>8 times baseline excretion</td>
</tr>
<tr>
<td>Cadmium</td>
<td>5 times baseline</td>
</tr>
<tr>
<td>Nickel</td>
<td>5 times baseline</td>
</tr>
<tr>
<td>Aluminum</td>
<td>3 times baseline</td>
</tr>
<tr>
<td>Arsenic</td>
<td>2 times baseline</td>
</tr>
<tr>
<td>Mercury</td>
<td>2 times baseline</td>
</tr>
</tbody>
</table>
Nutritional Metals that Increase Abnormally in Heart Muscle with Coronary Artery Disease

• Cobalt  600% more than healthy control myocardium
• Chromium  600% more than healthy control myocardium
• Iron  400% more than healthy control myocardium
• Zinc  280% more than healthy control myocardium

Such increased levels are toxic to cells

All Published Studies Show Benefit

For detailed scientific references with analysis:
www.drcranton.com
EDTA Chelation
Coronary Heart Disease
Clark, et al 1956

- 20 patients — 16 unstable angina
- Complete relief of angina in 17
- 16 asymptomatic at 21 months
- ECG normalized in 33%
EDTA Chelation
Coronary Heart Disease
Clark, et al 1960

- 76 patients — 33 post MI
- 87% of pts had 90% relief of angina
- 2 year mortality half that expected
- 20% had recurrent angina relieved by additional EDTA infusions
EDTA Chelation
Coronary Heart Disease
Kitchell & Meltzer 1960

- 10 patients with angina—6 post MI
- 9 had relief of angina
- 5 of 9 abnormal ECGs improved
- 3 with cardiomegaly → normal heart size
EDTA Chelation
Coronary Heart Disease
Kitchell & Meltzer 1963

- 28 new patients — 23 post MI
- 2 markedly improved; 16 improved
- Exercise capacity increased with clinical improvement
EDTA Chelation
Coronary Heart Disease
Kitchell & Meltzer  4 yr experience

- 38 total patients — 29 post MI
- 71% improvement of disabling angina
- 45% sustained improvement lasting up to 46 mos without follow-up treatments
EDTA Chelation
Coronary Heart Disease
Other Case-series

• Olszewer & Carter 844 patients
  77% marked improvement
  3% no improvement

• Deucher 215 patients
  70% symptomatic improvement

• Hancke & Flytie 265 patients
  91% symptomatic improvement
  8% unchanged; 1% worse
EDTA Chelation
Peripheral Vascular Disease
Clarke et al. 1960

- 31 pts — 22 rest pain, 1 dry gangrene
- 74% relief of rest pain & claudication
- 1 pt no change, 2 pts worse
- 2 amputated,
- 3/4 pts recurrent sx responded to rx
EDTA Chelation
Peripheral Vascular Disease
Lamar 1964, 1966

- 18 with diabetic ulcers, gangrene
- 100% had measurable improvement
- Healed ulcerations, improved pulses
EDTA Chelation
Peripheral Vascular Disease
Olszewer & Carter 1989

- 1130 patients
- 91% complete recovery
- 8% good recovery
- 7 of 10 pts with dry gangrene had satisfactory recovery
EDTA Chelation
Peripheral Vascular Disease
McDonagh, et al 1989

- Ankle brachial blood pressure index (A/B index)
- 77 patients, 117 diseased legs
- Initial mean ankle brachial BP index 0.77
- After treatment mean A/B index 0.94
- 22% improvement in A/B index $p<.001$
EDTA Chelation
Peripheral Vascular Disease
Hancke & Flytlie 1993

- 262 pts with claudication; 103 had rest pain
- 27 patients previously one amputation
- 82% improved (85% with rest pain)
- 24 of 27 pts avoided another amputation
- Improved skin temperature in 80%, skin color in 76%, A/B blood flow index in 83%
EDTA Chelation
Cerebral Vascular Disease
Casdorph 1989

- 15 patients documented cerebral blockage
- Technetium 99m blood flow studies
- 14 of 15 increased blood flow after EDTA
- All improved clinically
- \( p = <.0005 \)
Measuring Brain Blood Flow Increase
Technetium $^{99m}$ Before and after Chelation Therapy

Injecting Radioactive Isotope
Head positioned over scintillation Camera
Inflow of Technetium$^{99\text{m}}$ Isotope (red color)
Time-lapse Every 0.25 Second From Fop Left
Plotting Brain Blood Flow Using Technetium $^{99m}$ Before and after Chelation Therapy

Computer Quantifies and Graphs Brain Blood Flow Measurements
Casdorph, 1989

Computer Generated Graph of Blood Flowing Into Brain
Showing changes with blockage to flow

A = peak inflow over time  A - delayed inflow
b = maximum outflow    b - outflow delayed and less
                             complete with blockage

c = second pass
Computer Generated Graph of Brain Blood Flow

Right Carotid System       Left Carotid System

Normal Control Patient
Female 51 Years Old Before Chelation Therapy

After Chelation Therapy
Female 72 Years Old Before Chelation Therapy

After Chelation Therapy
Female 62 Years Old Before Chelation Therapy

After Chelation Therapy
Male 57 Years Old Before Chelation Therapy

After Chelation Therapy
Female 66 Years Old Before Chelation Therapy

After Chelation Therapy
Male 92 Years Old Before Chelation Therapy

After Chelation Therapy
Published Clinical Research
All positive — No negative data

- All published studies are positive and show benefit
- Many important studies were refused indexing by MEDLINE computerized index (censorship)
- Five indexed studies with positive data showing benefit were published with deceptive negative conclusions:
  2. Sloth-Nielsen, Guldager, et al 1991 *Danish Study*
  3. Can Rij, et al 1994 *New Zealand Study*
  5. Diehm, Schettler, et al 1986 *Heidelberg Study*

For detailed analysis and scientific references:  www.drcranton.com

Reappraisal

- 28 severe angina patients unresponsive to all other treatments, 23 had prior MI
- 71% improved after EDTA chelation
- 46% remained improved 18 months later with no further treatment
Sloth-Nielsen, Guldager et al, 1991
Danish Study

- Peripheral Vascular Disease with Claudication
- Maximum walking distance to claudication
- Chelation patients improved 100% more than controls
Van Rij et al, 1994 New Zealand Study

- Peripheral Vascular Disease with Claudication
- Maximum walking distance to claudication
- Chelation patients improved 78% more than controls
- Statistically significant increase in pulsatility index, \( p = <.001 \)
Coronary artery disease, angina, 84 pts
75% fewer chelation patients subsequently had bypass surgery (3 out of 4 chelation patients avoided bypass surgery, compared with controls)
Diehm, Schettler, et al 1986 Heidelberg Study

- Peripheral Vascular Disease with Claudication
- Maximum walking distance to claudication
- Chelation patients increased walking distance 400% more than controls
EDTA Chelation
Chappell and Stahl 2001
Meta-analysis of Published Studies

• 19 published studies met inclusion criteria
• 22,765 chelation patients studied
• 87% of treated patients had improved cardiovascular function by objective measurement
A Chelation Patient Previously Told by Two Surgeons that Amputation Was The Only Possible Treatment

51 Year Old Male Diabetic Patient Before Chelation Therapy
Same Patient Previously Told Amputation Was The Only Treatment

He Healed Completely After Chelation And is Still walking on this Leg 20 Years Later
Chelation Patient Previously Told Amputation Was The Only Treatment

60 Year Old Male Diabetic Before Chelation Therapy
He Healed After Chelation
Still Walking on this Leg Many Years Later
## Improvement of Multiple Organ Symptoms on Cornell Medical Index Health Questionnaire Before and After Chelation Therapy

McDonagh, et al, 2001

### Effect of EDTA Chelation Upon Multiple Systems in Symptomatic Subjects

<table>
<thead>
<tr>
<th>System</th>
<th>Sample Size</th>
<th>Initial Score</th>
<th>Final Score</th>
<th>Percent Reduction</th>
<th>Statistical Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal</td>
<td>101</td>
<td>2.44</td>
<td>1.69</td>
<td>31%</td>
<td>P&lt;0.001*</td>
</tr>
<tr>
<td>Skin</td>
<td>64</td>
<td>1.92</td>
<td>1.39</td>
<td>28%</td>
<td>P&lt;0.005*</td>
</tr>
<tr>
<td>Neurologic</td>
<td>108</td>
<td>2.56</td>
<td>1.97</td>
<td>23%</td>
<td>P&lt;0.001*</td>
</tr>
<tr>
<td>Genital</td>
<td>58</td>
<td>2.71</td>
<td>2.10</td>
<td>23%</td>
<td>P&lt;0.005*</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>130</td>
<td>4.02</td>
<td>3.13</td>
<td>22%</td>
<td>P&lt;0.001*</td>
</tr>
<tr>
<td>Respiratory</td>
<td>106</td>
<td>2.90</td>
<td>2.32</td>
<td>20%</td>
<td>P&lt;0.001*</td>
</tr>
<tr>
<td>Urinary</td>
<td>106</td>
<td>2.28</td>
<td>1.94</td>
<td>15%</td>
<td>P&lt;0.001*</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>124</td>
<td>3.62</td>
<td>3.16</td>
<td>13%</td>
<td>P&lt;0.025*</td>
</tr>
</tbody>
</table>

*statistically significant difference of the means
TACT timeline

- RFA for efficacy trial released by NCCAM & NHLBI
  - 04/30/01
- TACT funded as a cooperative agreement
  - 08/15/02
- IND obtained
  - 04/23/03
- First patient randomized
  - 09/10/03
- Patient enrollment
- 134th site activated
  - 08/17/09
- Patient 1708 enrolled
  - 10/04/10
- Last patient follow-up
  - 10/31/11
Eligibility

- Age 50 or older
- MI > 6 weeks prior
- Creatinine ≤ 2.0 mg/dL
- No coronary or carotid revascularization within 6 months
- No active heart failure or heart failure hospitalization within 6 months
- No cigarette smoking within 3 months
- Signed informed consent
# Baseline Characteristics

1708 patients randomized

<table>
<thead>
<tr>
<th></th>
<th>High Dose Vitamins (N=853)</th>
<th>Placebo (N=855)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>65 (59, 72)</td>
<td>65 (60, 72)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>29 (26, 33)</td>
<td>30 (27, 34)</td>
</tr>
<tr>
<td>Female (%)</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Hispanic or non-Caucasian (%)</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Diabetes (%)</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>Prior revascularization (%)</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>Statin (%)</td>
<td>74</td>
<td>72</td>
</tr>
<tr>
<td>Beta Blocker (%)</td>
<td>71</td>
<td>73</td>
</tr>
<tr>
<td>Aspirin (%)</td>
<td>85</td>
<td>82</td>
</tr>
<tr>
<td>Aspirin, clopidogrel, or warfarin (%)</td>
<td>92</td>
<td>90</td>
</tr>
<tr>
<td>LDL (mg/dL)</td>
<td>88</td>
<td>89</td>
</tr>
</tbody>
</table>
TACT STUDY RESULTS

A statistically significant benefit overall, but greater benefit for the third of all patients with diabetes.

For Patients with diabetes

40% reduction in risk of death from a cardiovascular event

52% reduced risk of recurrent MI

43% reduction in death from all causes
TACT Primary Endpoint in Diabetes Subgroup

- Placebo Infusions / Placebo Vitamins
- EDTA Chelation / High-Dose Vitamins

Event Rate vs. Months since randomization

EDTA Chelation/High-dose Vitamins vs. Placebo
HR (95% CI): 0.49 (0.33, 0.75)
P < 0.001