Chelation Therapy Yesterday, Today, and Tomorrow

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Chelation therapy in medicine is generally regarded to be the use of chelating agents to remove toxic heavy metals from the body. Chelation is pronounced kē'lät'shun. Toxic heavy metals include but are not limited to Arsenic, Cadmium, Lead, and Mercury. However, all metals can be toxic when present in large enough concentrations.

The first widely used medical chelating agent British Anti-Lewisite (BAL), also known as dimercaprol, was developed in the 1940’s. Lewisite is an arsenic based compound used in gas warfare. Also first used clinically in the 1940’s is the chelating agent EDTA (ethylene diamine tetra acetic acid). EDTA comes in two injectable forms that have been approved by the U.S. Food and Drug Administration (FDA), Calcium disodium EDTA to treat lead toxicity and Disodium EDTA to treat elevated blood concentrations of calcium. EDTA is effective in removing Calcium while BAL is not. BAL is effective in removing mercury but not calcium. Both remove lead. These and other medical chelating agents such as DMPS (2, 3 dimercapto-propane sulfonate), DMSA (dimercaptosuccinic acid) penicillamine (3-mercapto-D-valine), and DFO (desferrioxamine) all have distinctive characteristics governing circumstance dependent usefulness.

Magnesium disodium EDTA is created by the addition magnesium to commercially available disodium EDTA. This is the form of ETDA complex that has been popularly used to intravenously treat cardiovascular, autoimmune and other degenerative diseases. Despite five decades of use in treatment of cardiovascular disease intravenous EDTA is not embraced by mainstream medicine or approved by the U.S. Food and Drug Administration for treatment of cardiovascular conditions.

Studies favoring the use of intravenous EDTA in treatment of cardiovascular disease and other degenerative diseases have been in the medical literature since the 1950’s. N.E. Clarke, published in the American Journal of Science in 1956 that 19 of 20 patients with angina received unusual relief with normalization of electrocardiograms for some. Other benefits reported during this period, as they are still being reported today, include improved memory; better sight; hearing and smell; and an increase in energy. Heavy metal toxicity interferes with normal physiologic function and repair leading to numerous symptoms and contributing too many diseases. Multiple conditions may be alleviated simultaneously in the same person through reduction of heavy metal toxicity.

Various studies both pro and con have been performed regarding the benefits of chelation therapy. However, such studies performed thus far have been either too small in number of subjects, not of acceptable design, scientifically biased, or otherwise flawed to gain universal acceptance. Examining the overall effects of chelation therapy on 22,765 patients, 87% of the patients demonstrated objective benefit in a study published in 1993 by L.T. Chappell. et al. in the Journal of Advancement in Medicine. Since then, the popularity of chelation therapy has continued to grow with ever increasing numbers of success stories. Battles raged, as they continue to rage today, between physicians
promoting chelation based upon best available evidence and mainstream conservative clinicians who wish to restrict chelation usage unless a universally accepted study is performed that definitively proves efficacy. Approximately, a decade later the National Institutes of Health gave the nod and, more importantly $30,000,000 of funding, to perform a definitive study with 2,372 patients 50 years of age or older who have a history previous heart attack. The study is taking place at over 100 private physicians offices, clinics and medial centers' across the USA, including prestigious institutions such as Mt Sinai Hospital, Miami Beach, Mayo Clinic, and the University of Missouri.

The study is called TACT (Trial to Assess Chelation Therapy), and is led by cardiologist Gervasio A.Lamas, M.D., director of cardiovascular research and academic affairs at Mount Sinai Medical Center, Miami Beach. The study was carefully designed with input and agreement from both mainstream physicians and experts experienced in chelation therapy.

TACT follows a randomized double-blind format. Participating patients are placed into four different groups via a randomization process to help assure homogeneity. One half of the patients are given intravenous infusions of magnesium EDTA while the other half receives infusions of a liquid placebo. All the patients receive oral vitamin and mineral supplements to take home. In order to distinguish the contribution of the vitamin and mineral supplements from that of the intravenous infusions to clinical outcome, the two groups are subdivided into equal numbers of participants each receiving either high dose or low dose vitamin and mineral supplements. The actual compositions of the infusions administered and supplements dispensed are not disclosed to the patients nor the administering /dispensing personnel, hence, the phrase double-blind. All treatment records are coded for later evaluation.

Patients receive 30 weekly three hour infusions followed by 10 more administered biweekly for a total of 40. Routine medical care otherwise continues as before under the care of the patients’ own physicians throughout the study. All patients participating are followed until the end of the study, up to 5 years, to determine presence or absence of clinical benefits, such as reduced incidence of heart attack, stroke, hospitalization for angina, coronary revascularization, and death. Effects on quality of life and cost of health care savings will also be assessed. In addition to potentially gaining personal health benefits at no cost, patients participating in the study are also rewarded in knowing that their participation will contribute to the future well being of others who have or are at risk of developing coronary artery disease. If TACT proves chelation to be effective and cost effective, mainstream medicine will be forever changed for the better. There is no charge to patients for participating.

For information in regard to TACT or participating in TACT:
Tel. 888-644-6226
Web sites: http://nccam.nci.nih.gov/chelation/studysite.htm
http://www.clinicaltrials.gov/show/NCT00044213

EDTA may be used preventively as well as therapeutically. W.Blumer and E.M.Cranton published a study in the Journal of Advancement of Medicine which followed 231
subjects over the course of 18 years reporting a 90% reduction in cancer mortality in patients having had received 10 or more Calcium EDTA infusions compared to those who did not.

Oral EDTA is used today preventively and therapeutically. Despite 5% EDTA absorption per the oral route, studies have validated benefit. EDTA may also enhance detoxification in form of rectal suppositories and as an additive to bath water. Transdermal use of DMPS, a sulfur containing chelator, provides benefit where other routes of DMPS administration are less desirous. Sulfur containing foods such as eggs, garlic and broccoli contribute to reducing the body burden of susceptible toxic metals. The common herb/spice cilantro has gained much recognition for its ability reduce toxic metal burden. Nutritional supplements such as ascorbic acid, lipoic acid, malic acid, and DL methionine, humic acid and fulvic acid may be used to address metal toxicity as circumstances dictate. Various non-prescription preparations synergistically combining substances to enhance chelating properties are constantly being introduced into the marketplace. An innovative product based on zeolite has recently been introduced. Infrared heat saunas, magnetic mattresses, galvanic current, mineral baths and sweat inducing exercise have proven to benefit metal toxicity.

Metabolic and genomic testing offers information regarding our individual abilities to detoxify. With such information inherited and acquired weaknesses may be targeted nutritionally, medically and via life style modification to aid heavy metal detoxification.

Unraveling viral influences that affect heavy metal retention is being researched by Drs. A. Yasko and G. Gordon. The use of virus specific RNA based oral supplementation has demonstrated impressive clinical results in detoxification of heavy metals recalcitrant to previous attempts of removal with chelating agents alone. This futuristic technology is available for use today.

Web sites: www.autismanswer.com; www.holistichealth.com; www.gordonresearch.com

The American Board of Chelation Therapy which certifies physicians with toxic metal expertise, inclusive of chelation therapy, has recently changed its name to the American Board of Clinical Metal Toxicology. This was done in part to better reflect the need to address the bigger picture of heavy metal toxicity. We need to be environmentally proactive, to clean up contaminated areas, to control industrial and agricultural wastes, to remove toxic metals from vaccines and dentistry, and to educate the public in regard to the presence toxic metals in products we use, including the foods we consume.

For contact information regarding board certified physicians or other inquiries.
The American Board of Clinical Metal Toxicology (ABCMT)
Tel. 800-356-2228 Web site: www.abcmt.org

International College of Integrative Medicine (ICIM)
Tel. 866-464-5226 Web site: http://www.icimed.com
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Chelation: Technical Sidebar

Chemically, chelation is the process of binding an electrically charged metal atom with another molecule, the chelating agent (chelator), to form heterocyclic ring molecular structures. A heterocyclic ring contains dissimilar atoms. Chelating agents are molecules which have the capacity to form such structures when binding with metals. The electrical charge of the metal is neutralized by the sharing of electrons in chemical bonds between the metal and chelating agent. The resultant metal complex is a chelate. Such chemical bonds have been metaphorically depicted as grasping pincers of a claw. The word chelation is derived from the Greek language, ‘chele’ meaning claw.

‘Metal’ bonding with Chelating Agent EDTA (ethylene diamine tetra acetic acid) to form EDTA-metal-chelate

The metal is generically depicted by the letter, M. Metals which bind to EDTA include metals essential to life, such as magnesium and calcium, as well as toxic metals, such as cadmium and lead. Any metal can be toxic when present in too great a quantity. Nitrogen (N), oxygen (O) and carbon (C) atoms compose the basic ring elements of EDTA. The letter H depicts a hydrogen atom bonded with oxygen (O) to form OH. H2 depicts two hydrogen atoms which are bound to ring forming carbon (C) atoms. The single solid lines (–) between EDTA ring forming atoms represent single chemical bonds. The parallel lines (==) reflect double chemical bonds. The broken lines (---) depict “claw-like” bonds between non-metallic elements of EDTA and the chelated metal (M). Although Sulfur (S) atoms are not found in EDTA, they may be found in other chelating agents. The distinct
chemical make up of various chelating agents provide them with unique abilities to bind different metals under differing circumstances. Chelating agents are selected for therapeutic use based on their respective properties.

Chelation may be used to deliver metals into and remove metals from the body. Magnesium ascorbate (vitamin C) is a chelate found in orange juice and in nutritional supplements. Chelation involves reversible binding of metals. Thus, ascorbate may release the essential metal magnesium in the body and complex with the toxic metal lead to form lead chelate. The lead exits the body complexed as lead chelate, reducing the body burden of lead. Chelates generally exit the body through the kidneys via urine or through the bile via the stool. However, chelates may not necessarily eliminate toxic metals but rather redistribute them in the body. Since many orange juice drinkers and one daily vitamin and mineral tablet users have excess mineral toxicity and related diseases, the medical field of clinical metal toxicology has much to offer. Clinical metal toxicology, which includes chelation therapy, deals with various issues in regard to preventing and reducing metal toxicity.

Chelating agents are prevalently found in industry: textile dyeing, water softening, enzyme deactivation, and food preservation. Besides being useful in medicine, chelation is essential for life. Chlorophyll is a chelate of the metal magnesium. Vitamin B12 is a chelate of cobalt. Heme, a component of hemoglobin, is a chelate of iron.