

MARKHAM INTEGRATIVE MEDICINE

300 Main St. N., Ground Floor

Markham, ON

L3P 1Y8

905-294-2335

www.integrative-medicine.ca

www.twitter.com/DrJGannageMD

CHELATION THERAPY ALTERNATIVE MEDICINE FOR HEART DISEASE

Dr. John Gannage, MD, CCFP, DipH

Dr. Gannage practices Integrative Medicine in Markham, Ontario, offering both conventional medicine and complementary therapies. On the foundation of a solid education in traditional Western medicine attained at the University of Toronto (Medical Degree) and University of Ottawa (Family Medicine residency), Dr. Gannage has combined his background as a medical doctor with a broad understanding of alternative therapies, gained through post graduate training in homeopathy and nutrition. Therapeutic services are heavily rooted in addressing the underlying cause of disease. This includes a particular emphasis on nutrition, environmental causation, detoxification including chelation therapy, and homeopathy/homotoxicology.



Both our clinics were selected as research sites for a study sponsored by the National Institutes of Health. TACT (the Trial to Assess Chelation Therapy) is the largest clinical study ever conducted on chelation therapy. **Dr. Gannage enrolled the first participant in Canada in 2007.** The study is an international randomized, placebo-controlled trial, and is now closed to new participants. Upon completion of all the infusions given to over 1600 patients, the results will be tallied and published, likely in Spring 2012.

DR. GANNAGE ON the WEB: Dr. Gannage's presentation on the Health Effects of Lead, with a special emphasis on Cardiovascular Disease, is available as a webinar for Internet viewing at www.appwebinars.com/npp. Dr. Gannage's proceeds are donated to CAPE (the Canadian Association of Physicians for the Environment).

Atherosclerosis Overview

Atherosclerosis is a disease in which fatty material is deposited on the wall of your arteries, which narrows the arteries and forms “plaques”. The initial trigger may be an injury of some kind to the lining of the artery, caused by free radical damage or exposure to a noxious substance or infectious organism. Inflammation is also part of the process. Eventually, the fatty tissue can further irritate the wall of the artery, diminish the elasticity (stretchiness) of the artery, and interfere with the blood flow. Calcium deposits are involved in atherosclerotic plaque, which causes the blood vessels to harden. This in turn further reduces blood flow and can increase blood pressure. Over time, pieces of the plaques can break off, resulting in strokes if the vessels are leading to the brain. They may also slowly cut off blood supply to the heart, brain or other organs.

Risk Factors for Coronary Artery Disease

- Obesity
- Elevated LDL cholesterol
- Decreased HDL cholesterol
- Age > 50 years
- Diabetes
- Psychological stress/Depression
- Sedentary lifestyle
- History of heart disease
- Post menopause
- Tobacco use
- High blood pressure
- High cholesterol level
- High level of homocysteine, an amino acid in the blood (estimates are that 10% of CAD deaths are attributable to high homocysteine)
- Low testosterone levels
- Perhaps dental pathology
- Family History

Coronary artery disease (CAD) is a disease that affects the blood vessels that nourish the heart muscle. CAD is actually a result of atherosclerosis. When the coronary arteries become clogged or narrowed by these waxy “fats”, blood flow is restricted and the heart muscle does not receive adequate oxygen, which can lead to angina pectoris (chest pain), heart attack (if a clot develops) and/or even death. Angina may be worse during exercise or stress when there are increased oxygen demands on the heart. Other signs that may signal a heart attack are pain that spreads from the shoulders, neck or arms, pressure in the chest, dizziness, nausea, and/or shortness of breath. In the U.S., 460 000 deaths per year are attributed to CAD. The incidence and prevalence of CAD increases with age and is higher in males than females.

Patients with coronary artery disease (CAD) may also have atherosclerosis of other arteries, including peripheral arteries to the legs and brain. In fact, the 60,000 miles of arteries that traverse the human body and supply oxygen and nutrients to all tissues to

some extent can become diseased. A systemic therapy to assist optimal function of these arteries in a complementary fashion to our conventional treatments should be researched and welcomed, one would think, given the huge burden of atherosclerosis on our society and health delivery systems.

Chelation Therapy Overview

Chelation is a therapy in which vitamins and minerals are combined with various chelating agents (such as EDTA, DMPS or DMSA) to bind onto and remove various toxic metals from the body. Metals such as mercury, lead, arsenic, aluminum, among others, are removed from the body through this process.

Alzheimer's Disease, Autism Spectrum Disorders (ASD), Attention Deficit (Hyperactivity) Disorders, various neurological disorders and some cancers have been researched to determine if there is a link to toxic accumulations of heavy metals within the human body. Being the only recognized means to bind onto and remove these types of toxic elements from the human body, chelation therapy is seeing growing use as an adjunctive measure in the management of neurological and cognitive disorders. Many health professionals see similar value for conditions such as chronic fatigue syndrome, fibromyalgia, and some types of arthritis. It must be understood that using chelation for these conditions is considered unproven and non-standard by mainstream medicine, and the procedures are uninsured with costs directly charged to the patient.

Chelation therapy using EDTA (Ethylene Diamine Tetra-Acetic acid) plus vitamins and minerals at therapeutic dosages is also widely used to treat patients with heart disease, blocked arteries, angina and impaired circulation (especially in the legs - such as with diabetics). The patient rests comfortably during the treatment, which is painless and lasts between 1.5 to 3 hours when given intravenously. The number of treatments required varies and depends on the individual's initial condition and response to the therapy.

The Chelation Debate

Chelation therapy continues to be a subject of controversy within the medical community. Conventional medicine has supported the use of EDTA chelation in North America to the emergency treatment of lead poisoning. It is not endorsed by cardiologists for use in the treatment of heart disease(s), despite some medical studies reporting its success^{1,2}. As medical professionals, regardless of our positions in ongoing debates, we can agree that

1 Chappel LT, Stahl JP. The correlation between EDTA chelation therapy and improvement in cardiovascular function: a meta-analysis. *J Adv Med.* 1993;6:139-163.

2 Olmstead SF. A critical review of EDTA chelation therapy in the treatment of occlusive vascular disease. Klamath Falls, OR: Merle West Medical Center Foundation; 1998.

improving the quality of our patients' lives precedes any controversy. To this end, we encourage all our patients to carefully review and research all proposed methods of treatment, including conventional treatments, in order to make an educated decision about their health without any external bias. Our experience has led us to continue to stand behind chelation therapy as a safe and effective treatment protocol, while looking forward to the results of the TACT study to further guide treatment decisions.

So How Does Chelation Therapy Work?

There are a number of proposed mechanisms that answer this question. The ability of chelation therapy to rid the body of heavy metals is well established, and at the forefront of these therapeutic mechanisms.

Recent studies published in The Journal of the American Heart Association (see articles section below) have demonstrated that even low levels of lead in our tissues can negatively affect our cardiovascular system. Accumulated lead in our system: a) enhances any oxidative stress (see below) to our cells, b) exaggerates how our blood vessels react to the body's mechanism for dealing with emergencies and stressful situations ('fight or flight' situations), and c) reduces the cell's ability to repair it's own DNA³. Scientists have also linked lead exposure to ischemic heart disease⁴(heart disease characterized by reduced blood supply to the heart muscle).

Despite recent declines in environmental lead exposure, the cumulative lead exposure from prior decades of its use in our environment continues to affect our health. Until the 1970's, lead was a component of the gasoline we bought at the pump and burned in our cars. Unfortunately, unlike other toxins, lead does not vaporize, or get neutralized by the environment over time. The lead from that era continues to contaminate our soil and is a constant source of exposure⁵. Even today, leaded gasoline is still used in developing countries, and the contaminated exhaust makes its way to our continent on trade winds. Additionally, many old buildings have layers of lead paint with paint chips contributing to lead content in house dust. Lead pipes and copper pipes with lead solder contaminate drinking water. Occupational exposures are also common. Consequently, lead can accumulate in our bodies. Although conventional tests only look for lead in blood (and

3 Nawrot T, Staessen JA. Low-level environmental exposure to lead unmasked as silent killer. *Circulation*. 2006;114:1347-1349.

4 Jain NB, Potula V, Schwartz J, Vokonas PS, Sparrow D, Wright RO, Nie H, Hu H. Lead levels and ischemic heart disease in a prospective study of middle-aged and elderly men: the VA Normative Aging Study. *Environ Health Perspect*. 2007;115:871-875.

5 Hogervorst J, Plusquin M, Vangronsveld J, Nawrot T, Cuypers A, Van Hecke E, Roels HA, Carleer R, Staessen JA. House dust as possible route of environmental exposure to cadmium and lead in the adult general population. *Environ Res*. Published online before print July 12, 2006. Available at: <http://www.sciencedirect.com>. DOI: 10.1016/j.envres.2006.05.009.

follow a reference range that is well above harmful levels⁶), the majority of this lead is stored in our bones. Bones are constantly turning over, and as they do, the lead seeps out, keeping our tissues constantly exposed to the poison. EDTA effectively pulls this lead from our tissues, by binding to it, and in a sense escorts it to our kidneys where the chelated lead can be removed from the body.

EDTA is also a powerful antioxidant, combating free radicals. This free radical reversal is the reason that chelation is believed to have therapeutic benefit. Free radical damage to cells (oxidative stress), tissues and organs are linked to the aging process, cancers and to a litany of disease states. A therapy that can reverse such damage holds the capability to positively impact upon numerous health considerations.

Another proposed mechanism of EDTA chelation therapy is its mobilizing effect on calcium deposits in the body. Calcium that has deposited in unwanted places like joints and arteries is moved by EDTA. In the case of the arteries, this results in an increased arterial wall compliance, allowing the blood to flow past atherosclerotic plaques more easily. This mechanism also highlights the potential therapeutic benefit of EDTA therapy to osteoarthritic patients. Also related to calcium, a hormone named PTH, while regulating calcium levels, also acts as a dilator of blood vessels. PTH production is safely increased by EDTA chelation.

EDTA is utilized in laboratories for its well known anticoagulation (anti-clotting) mechanism. This anti-clotting property is employed further by chelation therapy to prevent blood clots in arteries. Intra-arterial blood clots are a major cause of heart attacks and strokes, especially when the vessel has been narrowed by atherosclerotic plaque. EDTA achieves this via three mechanisms that reduce stickiness of platelets (known as 'platelet aggregation', an important component of the blood clotting process)^{7,8}.

How It Works: Theories

- Removes Toxic Metals
- Powerful Antioxidant
- Calcium Mobilizing Effects
- Anticoagulation Properties

6 Menke A, Muntner P, Batuman V, Silbergeld EK, Guallar E. Blood lead below 0.48µmol/L (10µmol/dL) and mortality among US adults. *Circulation*. 2006;114:1388-1394.

7 Kindness G, Frackelton JP. Effect of ethylene diamine tetraacetic acid (EDTA) on platelet aggregation in human blood. *J Adv Med*. 1989;2:519-530.

8 Zucker MB, Grant RA. Nonreversible loss of platelet aggregability induced by calcium deprivation. *Blood*. 1978;52:505-513.

Who Can Benefit From Chelation?

Chelation has been used in the treatment of the following;

- Atherosclerosis
- Cardiovascular disease
- Coronary artery disease
- Stroke
- Senile dementia and Alzheimer's
- Autism
- Autistic Spectrum Disorders
- Chronic Fatigue Syndrome
- Early gangrene
- Essential hypertension (high blood pressure)
- Peripheral vascular occlusive disease (decreased blood circulation in the extremities - especially the legs, as with diabetic patients)
- Osteoarthritis
- Osteoporosis
- Fibromyalgia
- Multiple sclerosis
- Diabetes
- Some cases of Parkinson's disease

Are there any Adverse Effects ?

The most serious potential adverse effect of EDTA chelation is nephrotoxicity (kidney damage). This is dependent on the dose, the rate of infusion, the patient's kidney function, and the patient's body burden of toxic heavy metals. Conventional medicine, in the early days of chelation believed that 'more was better' and administered doses of EDTA in the range of 5-10 grams per day, and treatments were administered as often as 5 days per week. The result was kidney damage, or nephrotoxicity. Kidney damage today is only very rarely seen because the frequency, dose and rate in which the EDTA is administered is carefully adjusted and monitored, with consideration given to patients' age, weight, and blood tests. In addition, practitioners have found that judicious administration of EDTA over prolonged periods (three to six months and longer) actually improves kidney function, through the excretion of lead from kidney tissues⁹.

Other potential but rare adverse effects include hypocalcemia (excessively low blood levels of calcium, which could lead to muscle cramps or muscle fatigue) due to EDTA's binding excessively with calcium in the blood; hypoglycemia (low blood sugar, causing dizziness, sweating or rapid heart rate); and phlebitis (inflammation of the vein) usually due to improperly prepared solutions. Rarely reported side effects include chills and fever

⁹ Lin JL, Lin-Tan DT, Hsu KH, Yu CC. Environmental lead exposure and progression of chronic renal diseases in patients without diabetes. *N Engl J Med.* 2003;348:277-286.

following infusion, fatigue, seizures, heart rhythm problems, or rash. Having administered thousands of IV EDTA treatments, these side effects 1) are preventable, 2) rarely occur, and 3) are easily managed if they do.

Recommended Reading

Articles in the Journal of the American Heart Association:

Low-Level Environmental Exposure to Lead Unmasked as Silent Killer

Tim S. Nawrot and Jan A. Staessen

Circulation 2006;114;1347-1349

<http://circ.ahajournals.org/cgi/content/full/114/13/1347>

A Prospective Study of Bone Lead Concentration and Death From All Causes, Cardiovascular Diseases, and Cancer in the Department of Veterans Affairs Normative Aging Study

Marc G. Weisskopf, Nitin Jain, Huiling Nie, David Sparrow, Pantel Vokonas, Joel Schwartz and Howard Hu

Circulation published online September 8, 2009; DOI: 10.1161/CIRCULATIONAHA.108.827121

Suggested Books:

1. 'Bypassing Bypass Surgery' by Dr. Elmer M. Cranton.
2. Forty Something Forever: A Consumer's Guide To Chelation Therapy and Other Heart Savers - Harold and Arline Brecher.