CHELATION OF VASCULAR ATHEROMATOUS DISEASE

Over the past twenty years, chelation in medicine has has a wide range of application in many centers throughout the world. (1.2.3.4.) Recently, the application of this phase of therapy to the problem of vascular atheromatous disease promises great therapeutic value. The existence of calcium, as well as many other trace minerals, in the atheromatous deposit has been demonstrated. The chelation of calcium, and possibly other metals, by the use of intravenous EDTA has been demonstrated by many physicians.

Historically, chelation by EDTA, its analogues and other chelating agents, has been used for a wide range of disorders including lead and mercury poisoning, radio-active metal toxicity, porphyria, scleroderma, snake venom toxicity and many types of calcinosis. For over twenty years, chelation has been available as a therapeutic tool. It was first used in 1948 to chelate lead from patients with lead poisoning. Like all new concepts in therapy, especially when there are results in patients who are usually considered as progressively deteriorating cases, a good deal of questioning, doubt, and frank denial has been leveled at chelation therapy.

Concurrently, the bio-chemists and bio-physicists are becoming intrigued with the wide range of physiological metal chelation that occurs at the microcellular level of enzymatic chemistry, especially in regard to the trace metals K., Mg., Mn., Mo., Ca., Zn., Cu., etc. Therefore, it can be recognized that much of the future in medicine may well center around the chelation phenomena in all of its aspects along with enzymes and electronic therapy. It opens a large vista of insight into a wide range of disorders for which both etiology and therapy have been vague or undetermined. This includes the psychotic disorders, the so-called colagenous diseases, many of the disorders of metabolism and enzyme deficiencies, and the vascular atheromatous disorders (all types of calcinosis).
The theory of the development of atheromatous deposits has been evolving and has now assumed interesting concepts. We are moving away from the concept of deposits of debris from the blood into the artery wall: i.e., cholesterol, the lipids, and the glycerides or other carbohydrate metabolites. The concept now is either as a defense against trauma, toxic irritants, as a sensitivity reaction or a transitional pattern of all of these and other factors such as abnormal protein metabolism in arterial walls. This makes the plaque not adherent but an intrinsic part of the vessel wall, albeit a diseased part.

This is a review of a six year report of chelation therapy given to about 3,000 patients by the Staff of Columbia General Hospital, which has primarily been directed at the treatment of vascular insufficiency due to atheromatous vascular involvement. Our attention has focused upon the removal of metals in the atheroma as measured by changes in urinary excretion of metals during therapy. We have no way at present to economically test for all these metals.

PROCEDURE: The patient is examined for renal, hepatic, cardiac and thyroid status and function. The entire vascular tree is subjected to x-ray study for calcium deposits. Laboratory studies include chemistry profile, CBC, urinalysis, lipogram, prothrombin time, serum electrolytes, SGOT and other enzyme assays. The therapy consists of five hundred cc's of Procaine, HCL 0.1% in Saline (Abbot, 4186), to which three grams of disodium edetate (Abbot) and five thousand units of water soluble Heparin are added. Pyridoxine is given by mouth to support pyridoxine metabolism, which is sometimes upset, and to help prevent nausea. The diet is supplemented with additional multi-vitamins and when indicated, chelated trace metals may be given by mouth to help overcome deficiencies. The infusion is given slowly over a two or three hour period on a daily basis. Renal function is observed regularly, and if renal complications arise, the therapy is discontinued and the kidney permitted to recover before continuing on a carefully monitored basis. A tots
of fifteen or more treatments are given as the initial phase of therapy. The patient is advised to return in from three to six months for a review of progress, if possible, and if indicated is given another series of five to ten more treatments. The pattern of improvement is fairly constant. There is a continuing gain for two or three months after the series, and then they level off and remain status quo.

The urinary calcium follows a typical curve in many cases. It is usually found that the clinical improvement is more favorable in those who show increased urinary calcium excretion during the course of therapy. Urinary calcium may run up to 850 mg., but the average will be around 280 to 350 mg.

One of the problems that has been a challenge in chelation therapy through the years has been where the chelated metal is found. Is it free, unbound, or loosely chelated in abnormal tissue, as calcium in atheromatous deposits? In the case of lead poisoning, it has been shown that EDTA does not remove intracellular lead, but only that associated in peripheral fluid pools, or deposits, loosely organized. A careful study of serum and bone calcium during chelation therapy at our Institution has revealed no evidence that the chelated calcium has been removed from either the bone or blood. The clinical course and improvement in vascular insufficiency strongly supports the theory that the calcium excreted is more easily removed from the vascular wall atheromatous areas than from chemically bound calcium of the body during intra-vascular infusions.

In arteriosclerotic obliteran cases, specific changes include: definite improvement of pedal artery pulsation, gain in color, return of normal temperature and improvement in tissue quality of the feet. We find that ninety percent of these problems in the lower extremities make significant gains including regaining ability to walk long distances comfortably, freedom from claudication and
evidence of improved diastolic circulation. Those whose cerebral vascular system is severely damaged by arteriosclerosis and/or micro-circulation thrombosis, suffering from amnesia, confusion, aphasias, and motor coordination have improved. There has been a notable improvement in coronary circulation in all cases of angina, characterized by the patient having no need for nitrates after about the fifth infusion. An interesting, but not predictable dividend in some cases consist of improved renal functions, reduction of prostatic obstruction by calculi, decrease in the degree of insulin required by the diabetic, almost normal breathing in emphysematous patients, great improvement in arthritic patients and even in Parkinson's Disease sufferers. These are some of the objectives of this therapy and are sufficiently frequent to be significant and of real clinical importance.

COMPLICATIONS: The complications that should be recognized are simple drug sensitivity which can be overcome by discontinuing "Endrate" treatment for a few days and starting over. We also give large doses of Vitamin B. Complex. Nausea is fairly common, (about ten percent) and is usually cleared up by use of Pyrodorm by mouth. Local venous stasis and/or phlebitis must be avoided and is one of the reasons for adding the Heparin.

CONTRA-INDICATIONS: Renal diseases of parenchymal pathology with major functional inadequacy must be ruled out. In as much as the means of elimination of the chelation agent and its associated metal is by renal excretion, this is of primary concern. Advanced, but healed tubercular lesions commonly associated with calcium walling off the bacillus should be a questionable case to treat. Be very sure of adequate renal function.

It is remarkable how many devastated, handicapped middle-age and elderly
patients can tolerate this program of care. Lamar in Miami has reported (5) in his work with chelation, that he has taken completely agitated, apathetic, backward types of cerebro-vascular cases and given them a fairly normal life and joy in living by prolonged treatment. The findings of Titton (7) relative to abnormal metal content of a large volume of autopsy results reveals the extent of concentration of these abnormal ions in the various viscera of the body, and raises the question of how much clinical benefit can be gained by the chelating of these abnormal ions; i.e., Al, Bi, Cu, Cr, Ti, Ag, Au, Bi, Ni, Pb, and Se. Bio-chemists tell us that normal trace metals are essential in most of the enzyme directed chemical reactions of the human body. They also report that such normal trace metals may be displaced by abnormal metals, resulting in a deviation of the chemical reaction or an inhibition of it. This is true of most of the basic energy releasing cycles of our body economy. Most of these metal ions are not chemically bound, but are chelated and act as catalytic agents at the enzyme interchange. In as much as the body tends to eliminate the abnormal metals, chelation therapy could be expected to withdraw these before depleting the supply of normal metals. The atheromatous tissue deposits in the intima of the artery have abnormal trace metals in addition to calcium. Further research must be done in this area.

The problem of the maximum clinical benefit following chelation therapy occurring several weeks later raises the question of what mechanism is involved. It is a general phenomenon also reported by Nettler et al. (6) in vascular insufficiency cases. It has been suggested by independent observers that the calcium constitutes a binding or bonding factor to the complex molecules of the atheromatous matrix. When calcium or other metals are removed by chelation, the plaque becomes amorphous and may either be removed or dissolved by the blood. That this process might take several months is not highly rational.
One of the most striking applications of chelation therapy is illustrated by a case we had the opportunity to treat. This was a forty-eight year of male, who had developed diabetic gangrene of the right foot. His right great toe had already been amputated due to diabetic gangrene. It was planned to amputate his leg below the knee, but during the preliminary phase of his hospital stay, chelation therapy was instituted and the response by clearing the congestion and edema of the proximal half of the leg and an alteration in the pattern of the line between the normal tissue and gangrene (the gangrene area was black), warranted further delay of surgery and continued chelation therapy. After nineteen treatments, the entire gangrenous area cleared and his foot was clinically normal with good pulsation. This was a case of moderately severe diabetes being aggravated by alcohol and uncontrolled diet. The patient has now stabilized his regime on a therapeutic basis. He requires only half the oral insulin he had before chelation. We have treated many such cases with the same good results.

In view of the fact that many people show marked deficiencies in varied amounts of the normal trace metals essential to body chemistry, we also are concerned about meeting these deficiencies. We meet these needs by administering trace metals in a prepared chelated form (bound to a protein system by the chelated bond). In this way, we are on a two-way phase of chelation therapy. Eliminating abnormal deposits of metals and replacing needed normal trace metals on a chelated basis. Metals vary in regard to their absorption into the cell. Iron is utilized much better if it is in a chelated form, whereas Mg, is more easily utilized at the cell wall in an ionic form. Mg, is a generally distributed enzyme facilitating agent throughout all cells. Thus, its ionic form is more acceptable for cell penetration.

It has been shown that many of the currently used tranquilizers have a chelation
function, as also do most of the useful chemicals used in cancer therapy. (8) These and other findings constantly coming in from various centers over the world suggest that chelation in medicine is of basic importance.

SUMMARY: The development of chelation as a therapy and its implication in a wide range of normal and abnormal physio-chemical reactions of the human body is reviewed. A technique for the clinical improvement of cases suffering from vascular insufficiency is described, and areas of significant clinical improvement reviewed. A theory of the rational of the resolution of the atheromatous deposit in the vessel wall by chelation of calcium is outlined.

From our experience in treating these approximately 3,000 patients with varying degrees of calcinosis (arteriosclerosis, athrosclerosis, etc.), we will unequivocally state that it is our opinion that every patient with this disease in any part of the body should be given a therapeutic trial before any type of vascular surgery is performed.

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REFERENCES


