

agent to reduce the hazardous effects of arsenic in poison gases.

In the post-war era, the concept of using chelating agents for the removal of toxic elements was further explored. In the 1950s, a group of Michigan factory workers were stricken with lead poisoning.³ American scientists introduced EDTA chelation therapy in the medical field and successfully eradicated the lead toxin from the victims.³ After this event, the U.S. Navy began performing this therapy on sailors assigned to ships with lead based paints.³ Shortly after EDTA became the primary treatment strategy for children and adults with lead toxicity.³

However, the health benefits were not limited to the removal of lead toxins from the body. Patients also reported an improvement in hearing, vision, memory and smell.³ However, the most dramatic effects were observed in patients with cardiovascular pathologies. These patients were able to participate in light activity with little signs or symptoms of vascular claudication or chest discomfort.³

These findings prompted Dr. Albert J. Boyle and Dr. Gordon B. Myers, who were professors at Wayne State University, to conduct research into the potential positive effects associated with EDTA chelation therapy for the alleviation of symptoms related to atherosclerosis and CVD. During this time, these doctors very successfully treated numerous cases of atherosclerosis and poor cardiac function. However, most of the research is discredited due to a lack of scientific evidence.

Research into the benefits of chelation therapy has continued and is still currently being conducted today. In addition to atherosclerosis, chelation therapy may be capable of treating a wide variety of vascular diseases including diabetes, Buerger's disease, Raynouds disease, β -thalasemia and sickle cell anemia. Several studies demonstrating the beneficial effects of chelation therapy for these conditions exist. However, additional studies are necessary to establish the full effectiveness of chelation therapy.

Discussion

Human beings encounter a plethora of toxins that are generated from endogenous and exogenous sources. Endogenous toxins include the metabolized byproducts of neurotransmitters and hormones that are naturally produced in the body. Exogenous sources of toxins are

derived from the environment, the diet and metabolites produced by organisms within the gastrointestinal tract. Dietary sources account for the greatest proportion of toxins. Environmental sources of toxins are associated with exposure to heavy metals, polycyclic hydrocarbon compounds and xenobiotics. The heavy metals that primarily have the potential to accumulate within the body are cadmium, lead, mercury, iron and copper.

EDTA was first administered as a chelating agent for the treatment of lead toxicity and has been approved by the Food and Drug Administration for this purpose. However, due to the additional beneficial effects observed in lead poisoning victims, the ability of EDTA to be used as calcium chelators for the elimination of atheromatous plaques was proposed. This claim has been supported by insubstantial evidence consisting mainly of limited clinical trials and anecdotal testimonials. Recently many randomized control trials are being conducted to evaluate the efficacy of EDTA for the treatment of CVD.

Several published studies were evaluated. Many of the studies evaluated demonstrate some value for the treatment of CVD and associated conditions using EDTA. The first study analyzed was performed by Belloni et al using four groups of rats. All groups except group 2 had the renal artery and vein occluded for 60 minutes. Intravenous infusions of 40 mg/kg of body weight of EDTA were administered to groups 3 and 4 for 30 minutes prior to ischemia. In group 4, ischemia was followed by reperfusion for 60 minutes. The results of the experiment suggest that EDTA may be effective in the prevention of ischemic damage to the kidney.⁴

The data shows that there is minimal damage to the kidney and the surrounding vasculature in rats treated with EDTA. Serum creatinine and blood urea nitrogen levels of the ischemic groups are much higher than the groups treated with EDTA.⁴ In addition, the cross sectional areas extracted from the renal tissue of the ischemic and ischemic plus reperfusion untreated groups have a higher degree of damage when compared with the treatment group.⁴ It was also determined that the EDTA treated groups had a higher concentration of nitric oxide (NO) released into the vasculature.⁴

The endothelium, which is the inner layer of the blood vessels, is responsible for the production and secretion of NO for the purpose of regulating vasomotor function.² Other functions of the endothelium are the mediation of coagulation, platelet adhesion and

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