

# IRON

## Can We Get Too Much of a Good Thing?

by Ronald L. Myers, CNC

Imagine the headline: **BLOOD LETTING IS BACK—WITH A VENGENANCE!! HIGHER PERCENTAGE OF POPULATION SUFFERING WITH IRON OVERLOAD THAN PREVIOUSLY SUSPECTED. BLEEDING IS THE LATEST "NEW" THERAPY.** A headline like this, in the not too distant future is not beyond the realm of possibility anymore. Research is piling up regarding the link between iron overload and various chronic and degenerative diseases. I have over 200 references from the peer-reviewed literature relating to one facet or another of this subject. For the sake of your patients, your family and yourself it is time to look at this subject.

As I have written before and will probably write again, the idea that it "is just a food supplement" or "a nutrition program" so no harm can be done to anyone is FALSE! Iron supplements tend to fall into this category. We get it out of food or as a supplement that may be recommended as a tonic. It will lift our spirits and make us feel better. What harm could there be in that?

In this issue of e-Bytes I will briefly review some of the conditions that research has shown can be directly linked to iron overload, testing methods to determine excessive iron build up in the body, and what can be done to correct it.

This is not the iron bashing issue of e-Bytes. Iron is essential for life. The issue is *balance*. Adequate is good; too much is destructive. It is as one author called it "a double edged sword". (What an analogy, swords of old had iron blades.)

Research has shown that as we age, our body's iron levels tend to increase. Giorgy, C., et al, *Serum Ferritin and Aging, Age and Aging*, vol.10, p. 119, 1981. This does not mean younger people are immune to developing iron overload. As you will see in this issue, anyone, at any age may accumulate too much iron. Now you will have the tools to determine who these people are and what to do to help them reduce their iron levels and regain their health!

### **POSSIBLE MANIFESTATIONS OF IRON OVERLOAD**

#### **Rheumatoid Arthritis**

A rheumatoid patient with a negative RA factor on blood chemistry should be evaluated for iron overload. Too much iron can cause damage to joints and has long been known to be pro-inflammatory. Blake, D., et al, *The Effect of Synovial Iron on the Progression of Rheumatoid Disease, Arthritis and Rheumatism*, vol. 27(5), p. 495, 1984.

## **NEURODEGENERATIVE CONDITIONS**

### **Alzheimer's Disease**

Iron and Alzheimer's disease? Isn't aluminum in the neurofibrillary tangles the cause of Alzheimer's disease? I guess it would be easier to treat if degenerative conditions were as "cookbook" as that. This factor causes this condition. In the real world, finding the causes of chronic conditions can be a formidable challenge. Aluminum has been shown to be a piece of the multifactorial cause of Alzheimer's, as has *excitotoxin* exposure. Well over a decade ago, iron overload began being evaluated as a possible contributing factor in this devastating condition. *Alzheimer's Disease: Does Excess Iron Contribute?* Canadian Doctor, vol. 55(10), p. 15, Oct. 1989. Gillian, F., et al, *Defective Gallium-Transferrin Binding in Alzheimer's Disease and Downs Syndrome: Possible Mechanism for Accumulation of Aluminum in Brain*, The Lancet, vol. 335, p. 747, 1990.

### **Parkinson's Disease**

Iron plays its destructive role in this chronic condition by accumulating in the substantia nigra. Dexter, D., et al, *Increased Nigral Iron Content and Alterations in Other Metal Ions in Brain in Parkinson's Disease*, J. Neurochem, vol. 52, p. 1830, 1989. The neurotransmitter dopamine is produced in this area of the brain. This central nervous system chemical is involved in movement. Excessive iron destroys cells in the substantia nigra leading to the decreased levels of dopamine and increasing difficulty with movement seen in patients with Parkinson's Disease. Mardsen, C., *Parkinson's Disease*, The Lancet, vol. 335, p. 948, 1990.

### **Amyotrophic Lateral Sclerosis (ALS)**

Increasing iron levels have been implicated in the progression of Lou Gehrig's Disease.

## **PHYSICAL CONDITIONS**

### **Cancer**

In the last decade of the twentieth century, researchers began to link iron overload with several cancers. These include colorectal cancer, cancer of the bladder and esophagus; lung cancer (in smokers and non-smokers), cancer of the pancreas, prostate, ovary, skin, nervous system, kidneys and endometrium. Knekt, P., et al, *Body Iron Stores and Risk of Cancer*, Int J Cancer, vol. 56, p. 379, 1994. Stevens, R., et al, *Moderate Elevation of Body Iron Level and Increased Risk of Cancer Occurrence and Death*, Int J Cancer, vol. 56, p. 364, 1994.

In the mid 1970's, researchers analyzed tissue samples from women with breast cancer against those of controls for trace metal content. The findings were shocking. The cancerous tissue samples contained more iron than any other metal! Furthermore, these samples contained more than *three times* the amount of iron as the benign tissue samples. Santoliquido, P., Southwick, H., Olwin, J., *Trace Metal Levels in Cancer of the Breast*, Surgery, Gynecology & Obstetrics, vol. 142, p. 65, 1976.

The bottom line is this. Cancer cells require iron to grow! They do best in iron rich environments. Knekt, P.

### **Heart Disease**

It appears from a review of the peer-reviewed literature that Jerome Sullivan, M.D., Ph.D., was one of the first pioneers to establish a link between iron overload and heart disease. His theory was that premenopausal women have reduced risk for heart attack because they have lower iron stores than men due to menstrual blood loss. After menopause, the risk of heart disease in women rises to approximately what it is for men. Sullivan, J., *Iron and the Sex Difference in Heart Disease Risk*, The Lancet, p. 1293, June 13, 1981.

Research completed in Finland in 1992 established that as iron levels increase in the heart, the risk of heart disease as well as the severity of heart attacks also increases. Salonen, J., et al, *High Stored Iron Levels are Associated with Excess Risk of Myocardial Infarction in Eastern Finnish Men*, Circulation, vol. 86, p. 803, 1992.

### **Liver Disease**

The liver is the first place iron is stored in the body. The iron-overloaded liver begins to malfunction manifested at first by increased liver enzymes. The real cause behind this malfunction may not be immediately evident. Adding difficulty to arriving at a correct diagnosis, liver enzyme levels often fluctuate when due to excess iron stores. Unless a correct diagnosis is made, the prognosis becomes one of cirrhosis, enlarged liver, jaundice or even liver cancer depending on the individual and their genetic predisposition. Niederau, C., et al, *Survival and Causes of Death in Cirrhotic and in Noncirrhotic Patients with Primary Hemochromatosis*, The New England Journal of Medicine, vol. 313, p. 1256, 1985.

### **Infections of all types**

Research conducted at Indiana University has shown that pathogens of all classifications (candida, histoplasma, listeria, staphylococcus, streptococcus, etc.) grow in the presence of excess iron. Weinberg, E., *Iron Withholding: A Defense Against Infection and Neoplasia*, Physiological Reviews, vol. 64(1), p. 65, 1984.

I hope this brief review of the literature regarding iron overload and conditions that *may* be directly caused by it has peaked your interest to explore this subject further. Space does not permit a full expose' of all of the conditions that may be directly linked to excess iron in the body. Let me say this, any condition that does not respond to therapy or appears to be "idiopathic", should be investigated for possible iron overload using the means discussed in the next section of this paper.

## **DIAGNOSING IRON OVERLOAD**

In this section, I will cover the laboratory tests used to diagnose hemochromatosis. These tests are serum iron, serum ferritin, total iron binding capacity (T.I.B.C.), and transferrin saturation. Transferrin can be calculated if you have not ordered this test for the patient. The other laboratory tests listed above should be part of your standard laboratory panel.

### **How to Evaluate the Tests**

Different laboratories have different values for their reference ranges. The Balancing Body Chemistry group has developed a set of Optimum Ranges (based on health), which I will use in this presentation (with the exception of Transferrin saturation).

*Serum Iron*—50 to 100 ug/dl

*Serum Ferritin*—10 to 110 ng/ml

*T.I.B.C.*—250 to 350 ug/dl

*Transferrin Saturation*—15 to 30% (Based on research reported by Stevens, R. et al, cited above).

To calculate Transferrin saturation, divide the serum iron value by total iron binding capacity (T.I.B.C.) value and multiply the result by 100. As the Transferrin saturation percentage begins to rise above 30, so do the risks of developing an iron overload related disease.

Blood tests have their limitations and can, at times present a less than accurate picture depending on many variables. For example, transferrin saturation levels tend to decrease during infection, inflammatory states and chronic illnesses with no other evidence to support a diagnosis of iron deficiency anemia. In this case, other tests may be needed to make an accurate determination of hemochromatosis if it is suspected. (Please suspect it if the condition is not responding to therapy or you cannot find a clear cause for the condition.)

A test you may want to consider, without sending the patient out for a liver biopsy is a deferoxamine challenge followed by a 24-hour urine test. This test is capable of detecting toxic levels of other metals as well as iron with greater accuracy than a blood test.

### **NUTRITIONAL TREATMENT OF HEMOCHROMATOSIS (IRON OVERLOAD)**

If use of the tools outlined above has helped you to determine that your patient is suffering from an iron overload related condition, the prognosis can be extremely morbid if not taken seriously and corrective measures implemented.

The patient should limit consumption of iron rich foods such as beef, organ meats, spinach, soybeans, wheat and corn. Avoid foods and food supplements with nutrients that enhance iron absorption such as ascorbic acid (vitamin C), citric acid (lemons, limes, oranges, grapefruit), fructose (read labels—high fructose corn syrup, a double whammy), lysine, histidine, cysteine and methionine. Avoid iron cookware and use pure water for cooking and drinking such as reverse osmosis purified; no distilled water, city, or well water. Increase foods high in fiber; no alcohol.

**SUPPLEMENTATION:**

Zinc and iron compete for absorption; zinc can impair the absorption of iron. Crofton, R. et al, *Inorganic Zinc and the Intestinal Absorption of Ferrous Iron*, Am J Clin Nutr, vol. 50, p. 141, 1989. **Zn Zyme Forte** 2 tablets t.i.d.

The mineral manganese is very effective in inhibiting the absorption of iron. Rossander-Hulten, L., et al, *Competitive Inhibition of Iron Absorption by Manganese and Zinc in Humans*, Am J Clin Nutr, vol. 54, p. 152, 1991. **MnZyme Forte** 1 tablet t.i.d.

Calcium is another mineral that has a blocking effect on iron absorption. Cook, J., Dassenko, S., Whittaker, P., *Calcium Supplementation: Effect on Iron Absorption*, Am J Clin Nutr, vol. 53, p. 106, 1991. **CaZyme** 2 tablets t.i.d.

High fiber diets have long been known to limit iron absorption. McCance, R., Edgecombe, C., Widdowson, E., *Phytic Acid and Iron Absorption*, The Lancet, p. 126, July 31, 1943. **Colon Plus Capsules** 4 capsules t.i.d.

The above supplements can be used alone or in conjunction with chelation (deferoxamine) therapy and/or phlebotomy. In cases of severe iron overload or in the early stages of therapy, I feel that every modality available to us should be used to insure the best outcome for the patient.

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