Colorectal Cancer and Iron Supplementation

During the past sixty-five years, several hundred studies in animal and human populations have reported that iron loading is an important risk factor for cancer. The metal is carcinogenic in three ways. First, iron is a powerful oxidant. This action can start the cancer process by causing breaks in DNA strands and by altering cellular structures. Second, iron can bolster the growth of cancer cells by suppressing our white blood cell defenses. Third, iron is an essential nutrient for cancer cell multiplication.

The body locations of primary cancers are associated with the tissue sites of iron accumulation. For example, inhaled iron is deposited in the respiratory tract. Thus persons who acquire excessive iron by inhalation have greatly increased risk of developing cancers of the larynx, bronchial tree and lungs. Subcutaneous injection of poorly absorbable iron compounds have resulted in sarcomas developing at the injected sites. In untreated persons with hemochromatosis, accumulation of iron in cirrhotic livers is a well-recognized risk factor for hepatic carcinoma. Indeed, even in noncirrhotic livers, hepatocellular carcinoma can occur in persons who have elevated liver iron.

A number of investigators in the U.S and abroad have compared colorectal cancer patients with healthy persons with regard to amount of dietary iron intake, use of iron supplements, body iron deposits (measured by serum ferritin or transferrin iron saturation), and gene status for hereditary hemochromatosis (HHC). A leader in this field is Richard L. Nelson, MD, FACS (Department of Surgery, University of Illinois). Recently, Dr. Nelson published a review of thirty-three relevant studies.

Of the larger studies, three-quarters confirmed the positive association of colorectal cancer risk with ingestion of excessive iron, high body iron deposits, or HHC gene mutations. Dr. Nelson carefully graded the 33 reports by strength of their data and by the quality of the authors' analyses. He focused especially on whether the dietary information (including the use of supplements) was complete and whether iron deposits were correctly measured. Dr. Nelson gave a grade of 'one' to the best ten of the reports. Of the ten, eight showed a positive correlation between colorectal tumor formation and iron loading.

In a study reported earlier by Dr. Nelson, HHC heterozygote carriers were found to have increased risk for colonic polyps and colon cancer. In 1999, a study at Umea School of Medicine in Sweden found that persons who are compound heterozygotes for HHC and who also have a gene mutation for the transferrin receptor protein had nearly a nine fold increased risk for colorectal cancer. Persons with this combination of gene mutations likewise have a greater tendency to develop such other malignancies as multiple myeloma and breast cancer.

Not all heterozygote carriers of HHC gene mutations develop iron loading. But in those carriers in whom transferrin iron saturation or serum ferritin tests indicate increased iron deposits, phlebotomies should be considered. Dr. Nelson also is concerned with our acquisition of excessive iron by ingestion of cereals and breads to which iron has been added as well as by our use of iron supplements. He has stated that "it is likely that as many people are being injured by iron supplementation as are receiving medical benefit from it. Those individuals who are particularly at risk are the top 5% of U.S.

Recommendations!!!

- Do not take iron pills
- Reduce the amount of red meat in the diet
- Get a regular check-up that includes a colon exam
- Eat whole, fresh fruits and whole grains
- Drink at least a liter of water per day
- Stay active, move anyway you can as often as possible

vitamin users who may be taking up to five times the daily allowance for iron." Dr. Nelson noted earlier that "iron doping of healthy individuals to improve performance may well have dire health consequences not less severe than anabolic steroids."

There is well-established support for Dr. Nelson's conclusions. Among the most illustrative are Dr. Deneo-Pellegrini's study published in 1999 European Journal of Cancer Prevention entitled Dietary Iron and cancer of the rectum: a case control study in Uruguay. Rectal cancer occurs a the rate of 12.5 per 100,000 males and 7.7 per 100,000 females in this population. It is noteworthy that Urguanians are great consumers of beef, which ranks among the highest in sources of heme iron, the type of iron most easily absorbed by the body. Dr. John Wurzelmann, Division of Digestive Disease University of North Carolina Chapel Hill and his colleagues substantiate what Nelson provides. In his scientific article entitled Iron Intake and the Risk of Colorectal Cancer, which appeared in Cancer Epidemiology, Biomarkers & Prevention, Wurzelmann concludes that "...iron may be an important determinant of colorectal cancer risk."

Most absorption of iron takes place in the duodenum. Some scientists speculate that there is another iron absoption site toward the end of the small intestine. Iron not absorbed passes through the intestine and is eventually excreted.

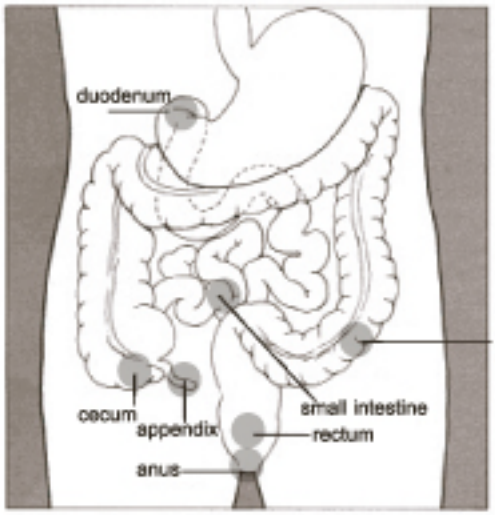

Image courtesy of National Cancer Institutes
www.cancer.gov

According to The American Gastroenterological Association:

- Colorectal cancer is the second leading cancer killer in the United States, and the third most common cancer overall.
- Eighty to 90 million Americans (approximately 25 percent of the US population) are considered at risk because of age or other factors.
- According to a study in a 1999 issue of Journal of the American Medical Association, from 1990 to 1997 spending for vitamins and minerals rose from $900 million to $3.3 billion a year.

CT Colonography

GE Medical Systems has developed a new computed tomography (CT) technique for imaging the colon, called CT Colonography. Approved by the U.S. Food and Drug Administration September, 2001, this technology offers an alternative to the endoscope. Using GE's LightSpeed Ultra CT scanner, the entire abdomen can be scanned in 10-20 seconds. This allows doctors to immediately see views of the colon from both the supine (lying on one's back with face up) and prone (lying face down) positions at the same time making it easier for them to accurately detect the size and location of polyps and lesions.

NEW!

Advantages of colonography are of special interest to physicians with elderly patients who can't tolerate the sedation needed for endoscopy and colonoscopy, patients with blockages in the colon, people who are reluctant to have a colonoscopy, and patients taking certain medications.

For more information visit GE Medical Systems website
http://www.gemedicalsystems.com/

References for your physician:

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