Can Vitamins Prevent Chronic Myelogenous Leukemia?

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Many medical doctors regularly dismiss lab tests that are only slightly out of the standard reference ranges. There are two basic reasons for this. First, medical doctors are trained to diagnose and treat disease. Second, most drugs are very powerful and have severe side effects. Therefore many physicians choose conservative approaches when the symptoms of a disease are mild (i.e. wait and see if the problem goes away). A wise approach would be to use nutritional strategies to support the body’s natural healing ability during these times.

With chronic myelogenous leukemia (CML), the blood smear (complete blood count) often shows moderate elevations in white blood cell counts that may persist for years and be benign. (i.e. mild or non-malignant, non-cancerous). In CML the platelets (which heal wounds and stop bleeding in the body) cease to function properly. This results in symptoms of poor wound healing and easy bleeding, including swollen gums and purple spots on the skin (purpura).

Over time, chronic myelogenous leukemia can become acute, resulting in a medical crisis. Conventional medical treatment is a marrow transplant and chemotherapy with drugs such as Hydroxyurea (Hydrea), Busulfan (Myleran), Plicamycin (Mithracin, Mithramycin), and Vincristine (Oncovin). Interferon alfa (Alferon, Intron, Roferon) is an immune modulator that has been shown to produce remission in some patients, but the long-term benefit is not yet known. The goal of conventional medical treatment is palliation (i.e. reducing or alleviating the symptoms without curing the underlying disease).

Ionizing radiation is considered to be the primary cause of chronic myelogenous leukemia. Radiation damages the chromosomes in our cells. This opens oncogenes (genes that form cancer cells). The incidence of CML is increased in patients with Down syndrome (abnormal chromosome 21) and Philadelphia chromosome (translocation of an oncogene from chromosome 9 to chromosome 22).

Perhaps the most exciting news about chronic myelogenous leukemia is that several nutritional supplements, particularly vitamin A (Retin-A) and vitamin D-3, have been shown to be very effective.

**Retin-A and Vitamin A**

Retin-A (Tretinoin, All-Trans-Retinoic Acid, ATRA) has been the focus of several studies on chronic myelogenous leukemia. It is currently approved for use as a chemotherapeutic agent for acute promyelocytic leukemia (APL). Retin-A, like other retinoids, induces cancer cells to mature, thereby eliminating abnormal cellular proliferation that is characteristic of cancer. Several studies have shown positive results with Retin-A alone (Cambier, Wattel et al. 1996) (Sagayadan, Wiernik et al. 1994), and combined with interferon alpha. (Mahon, Chahine et al. 1997)
Of particular interest is one study in which 153 patients with chronic myelogenous leukemia were treated either with busulfan (Myleran) or busulfan plus vitamin A. The addition of vitamin A resulted in somewhat longer durations of clinical progression-free survival (median 46 months) and overall survival (51 months) when compared to those in the busulfan arm (medians 38 and 44 months). However, the differences were not statistically significant. The authors of the study concluded that further investigation of retinoids in chronic phase CML is warranted. (Meyskens, Kopecky et al. 1995)

**Other Vitamins**

Several other vitamins have been studied for use with Chronic Myelogenous Leukemia, including vitamins D3, E, B12 and K. (Lasky, Bell et al. 1990) (Singh, Kharb et al. 2000) (Ghalaut, Singh et al. 1999) (Drabick, Davis et al. 2001) (Areukul, Panatampon et al. 1977) (Yaguchi, Miyazawa et al. 1997) The relationship between free radicals (oxidative stress) and CML is also being examined, with particular attention to glutathione metabolism. (Kumerova, Lece et al. 1998)

A case report published in the *British Journal of Haematology* described a complete remission that was achieved and sustained for 15 months after treatment with 25-OH vitamin D3. (Mellibovsky, Diez et al. 1993)

**Curcumin**

Curcumin has recently emerged as a major anti-cancer compound. An article published in the *Journal of the American College of Nutrition* described a study in which curcumin was shown to be cytotoxic against human chronic myeloid leukemia in vitro. (Nagabhushan and Bhide 1992)

**Conclusion**

It is not uncommon for lab test results that are slightly out of range to be dismissed by medical doctors as insignificant. While this may mean that there is no diagnosable disease, it is a warning sign that the body is not functioning at an optimal level. Slightly elevated white blood cell counts combined with symptoms of easy bleeding may indicate chronic myelogenous leukemia. Focused nutritional supplementation may provide a way to address CML in its early stages.

Research into natural supplements for use with chronic myelogenous leukemia is in its infancy. Several studies have shown promising results with retinoids, including Retin-A (all-trans retinoic acid, Tretinoin) and vitamin A. Vitamins D3, E, B12, K and antioxidants, such as glutathione, may also hold promise.
References


