

that their role in DNA synthesis and repair is most likely responsible.

“The findings from this study suggest that folate and vitamin B6 may have the potential to be chemopreventive against breast cancer and that ensuring adequate circulating levels of folate and vitamin B6 by consuming

foods that are rich in these nutrients, such as oranges, orange juice, and fortified breakfast cereals or vitamin supplements, may contribute to a reduction in the risk of breast cancer,” concluded the researchers in their report. “Adequate folate levels may be particularly important for women

who are at higher risk of breast cancer because of higher alcohol consumption.” —*Dr. Marc Ellman*

1. Zhang, S.M. et al. Plasma folate, vitamin B6, vitamin B12, homocysteine and risk of breast cancer. *J Natl Cancer Inst* 2003 Mar 5;95(5):373-80.

2. Wu, K. et al. A prospective study on folate, B12 and pyridoxal 5'-phosphate (B6) and breast cancer. *Cancer Epidemiol Biomarkers Prev* 1999 Mar 1;8(3):209-17.

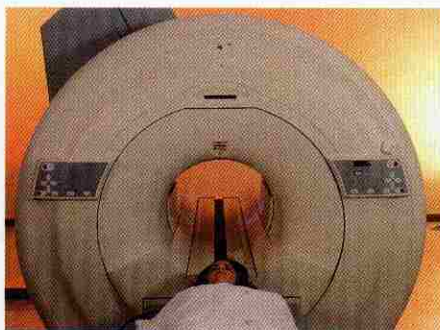
## Coenzyme Q10 deficiency linked to cerebellar ataxia

Coenzyme Q10 (CoQ10) supplementation may help some people with cerebellar ataxia, a rare neurological disorder. The cerebellum is a part of the brain that is responsible for coordinated movement. If the cerebellum does not function properly, a person can acquire movement disorders known as cerebellar ataxia. These patients may develop such symptoms as difficulty with balance, coordination or speech, and may even develop seizures. Researchers at the Columbia University College of Physicians and Surgeons in New York City have discovered that some patients with cerebellar ataxia have low levels of CoQ10. They speculate that CoQ10 supplementation may make these patients better.

CoQ10, also known as ubiquinone, is involved in energy production in probably every cell in the human body. Research has shown that it is especially important for cardiovascular health, as the heart requires large amounts of energy to efficiently pump blood throughout your body. CoQ10 has also been shown to have antioxidant properties.

For their study, which was published in the April 8, 2003 issue of the medical journal *Neurology*,<sup>1</sup> the researchers measured CoQ10 concentration in muscle biopsies from 135 patients with cerebellar ataxia. Thirteen of the patients demon-

strated markedly decreased levels of CoQ10 in their skeletal muscle. All of these patients had childhood-onset ataxia and atrophy of their cerebellum on MRI scans. Five more patients with low CoQ10 levels were identified, but four were excluded from the study because they had adult-onset ataxia and one child was excluded because of a coexisting medical disorder.



The researchers stated that of the 135 patients studied, more may actually be suffering from CoQ10 deficiency than the ones they reported. This is due to their stringent laboratory cut-off values for defining CoQ10 deficiency. “Some ataxic patient with milder CoQ10 deficiency may also have primary CoQ10 deficiency,” stated the study authors.

In 2001, the authors of the current study published a report of six patients with cerebellar ataxia and a severe deficiency of CoQ10 in the skeletal muscle.<sup>2</sup> Therefore, they

have now reported a total of 19 patients with cerebellar ataxia probably related to low CoQ10 levels. The most common feature among these 19 patients is seizures. Many also demonstrated delayed motor development and mental retardation.

All the patients in the current study were started on CoQ10 supplementation. The researchers, however, were unable to control the daily dosages received because of availability and financial constraints. Most patients demonstrated improvement of symptoms with CoQ10 supplementation. One patient, a nine-year-old female with cerebellar ataxia since age six, was suffering from seizures that were not well-controlled with valproic acid, a common anti-seizure medication. After receiving CoQ10 supplements, her seizures disappeared.

“Within one year, we have identified 13 new cases of cerebellar ataxia associated with CoQ10 deficiency, indicating that this syndrome may be a relatively common cause of cerebellar atrophy in children,” concluded the researchers. “Diagnosis is important because there is some evidence that patients may benefit from early CoQ10 supplementation.”

—*Dr. Marc Ellman*

1. Lamperti C. et al. Cerebellar ataxia and coenzyme Q10 deficiency. *Neurology* 2003 Apr 18; 60(7):1206-8.

2. Musumeci O. et al. Familial cerebellar ataxia with muscle coenzyme Q10 deficiency. *Neurology* 2001 Apr 10; 56(7):849-55.

